



Map of the Sydney region

For the Ecology of Sydney Plant Species the Sydney region is defined as the Central Coast and Central Tablelands botanical subdivisions.

Ecology of Sydney plant species

Part 6 Dicotyledon family Myrtaceae

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Abstract

Benson, Doug and McDougall, Lyn (National Herbarium of New South Wales, Royal Botanic Gardens, Sydney, Australia 2000. Email: Doug_Benson@rbgsyd.gov.au) 1998 Ecology of Sydney plant species: Part 6 Dicotyledon family Myrtaceae Cunninghamia 5(4) 808 to 987. Ecological data in tabular form are provided on 227 plant species of the family Myrtaceae, 225 native and 2 exotics, occurring in the Sydney region, defined by the Central Coast and Central Tablelands botanical subdivisions of New South Wales (approximately bounded by Lake Macquarie, Orange, Crookwell and Nowra). Relevant Local Government Areas are Auburn, Ashfield, Bankstown, Bathurst, Baulkham Hills, Blacktown, Blayney, Blue Mountains, Botany, Burwood, Cabonne, Camden, Campbelltown, Canterbury, Cessnock, Concord, Crookwell, Drummoyne, Evans, Fairfield, Greater Lithgow, Gosford, Hawkesbury, Holroyd, Hornsby, Hunters Hill, Hurstville, Kiama, Kogarah, Ku-Ring-Gai, Lake Macquarie, Lane Cove, Leichhardt, Liverpool, Manly, Marrickville, Mosman, Mulwaree, North Sydney, Oberon, Orange, Parramatta, Penrith, Pittwater, Randwick, Rockdale, Ryde, Rylstone, Shellharbour, Shoalhaven, Singleton, South Sydney, Strathfield, Sutherland, Sydney City, Warringah, Waverley, Willoughby, Wingecarribee, Wollondilly, Wollongong, Woollahra and Wyong.

Data are derived from herbarium collections, literature and field observations. It is hoped that the many, often alarming gaps in the information available will stimulate much-needed research into the ecology of more of the species. Information is provided so far as available to us for each plant species in the following categories:

Life History: Growth form, vegetative spread, longevity, primary juvenile period (time from germination to fruiting), reproduction, flowering and fruiting times, fruit/seed type, dispersal, establishment and growth, fire response, interaction with other organisms.

Distribution: Status/origin (native/naturalised), botanical subregions, distribution in Sydney area, selected locations.

Habitat: Habitat, altitude, annual rainfall, typical local abundance, vegetation, substrate, exposure.

Conservation: Conservation status.

Introduction

The *Ecology of Sydney plant species* aims to provide ecological information on native and naturalised Sydney plants. Particular emphasis has been given to data that are relevant for ecologists and natural area managers, for people involved in bush regeneration, land rehabilitation and landscape design, for researchers in many fields and for a wide range of people who are interested in bushland and native plants. Species-specific information is also relevant to environmental impact assessment and to studies involving changes in drainage, water movement, wind exposure, nutrient conditions and fire regimes on plant species and plant communities. Information included covers growth form, flowering and fruiting times, longevity and maturation periods, pollination and seed dispersal data, distribution, habitat and plant community, as well as responses to fire and disturbance where available and is complementary to the descriptive texts in taxonomic handbooks such as the *Flora of New South Wales* (Harden 1990–93).

Part 6 of the *Ecology of Sydney plant species* covers the Dicotyledon family Myrtaceae.

Methods

Part 6 follows the format used in Parts 1–5 (Benson & McDougall 1993, 1994, 1995, 1996, 1997). The Sydney region is defined as the Central Coast and Central Tablelands botanical subdivisions (i.e. approximately bounded by Lake Macquarie, Orange, Crookwell and Nowra) (Fig. 1). This is the area broadly covered by *Flora of the Sydney Region* (Carolin & Tindale 1993), with the exception that the Hunter Valley is not included here since it lies within the North Coast and Central Western Slopes subdivisions. Relevant Local Government Areas are Auburn, Ashfield, Bankstown, Bathurst, Baulkham Hills, Blacktown, Blayney, Blue Mountains, Botany, Burwood, Cabonne, Camden, Campbelltown, Canterbury, Cessnock, Concord, Crookwell, Drummoyne, Evans, Fairfield, Greater Lithgow, Gosford, Hawkesbury, Holroyd, Hornsby, Hunters Hill, Hurstville, Kiama, Kogarah, Ku-Ring-Gai, Lake Macquarie, Lane Cove, Leichhardt, Liverpool, Manly, Marrickville, Mosman, Mulwaree, North Sydney, Oberon, Orange, Parramatta, Penrith, Pittwater, Randwick, Rockdale, Ryde, Rylstone, Shellharbour, Shoalhaven, Singleton, South Sydney, Strathfield, Sutherland, Sydney City, Warringah, Waverley, Willoughby, Wingecarribee, Wollondilly, Wollongong, Woollahra and Wyong.

The Sydney region, as defined here, includes approximately 3500 plant species, both native and naturalised. To deal effectively with this number, the work has been divided into parts each of approximately 350 species based on plant families beginning with ferns, Cycads and Gymnosperms, and then Dicotyledon and Monocotyledon families. Within these groups, families, genera and species are arranged alphabetically:

- Part 1: Ferns, Fern allies, Cycads and Conifers,
Dicotyledon families Acanthaceae to Asclepiadaceae (*Cunninghamia* 3(2) 1993)
- Part 2: Dicotyledon families Asteraceae to Buddlejaceae (*Cunninghamia* 3(4) 1994)
- Part 3: Cabombaceae to Eupomatiaceae (*Cunninghamia* 4(2) 1995)
- Part 4: Fabaceae (*Cunninghamia* 4(4) 1996)
- Part 5: Flacourtiaceae to Myrsinaceae (*Cunninghamia* 5(2) 1997)
- Part 6: Myrtaceae** (*Cunninghamia* 5(4) 1998)
- Part 7: Nyctaginaceae to Rubiaceae
- Part 8: Rutaceae to Zygophyllaceae
- Part 9: Monocotyledon families
- Part 10: Monocotyledon families

For each species (and generally for subspecies) a data sheet is prepared incorporating life history, distribution and habitat data from specimens in the National Herbarium of New South Wales; this information is entered in a database together with data from literature sources both published and unpublished. References have been cited where appropriate but for unreferenced data responsibility has been assumed by the authors. A provisional compilation sheet with the available information is then prepared and distributed to interested persons for comments and additions/alterations. This compilation is then published in parts in the summer issue of *Cunninghamia*, with the subsequent long-term aim of producing a book at the completion of the ten parts. This will allow the incorporation of new and additional material.

Part 7, Nyctaginaceae to Rubiaceae, is planned for publication in 1999, and any information that readers would like included should be sent to the authors by 30 June 1999.

Ecological review papers may be appropriate for families in future issues, particularly the major families e.g. Proteaceae, but papers would also be welcomed for smaller families. Authors interested in contributing such papers should contact the Scientific Editor.

Information categories

For each species or subspecies, information is presented under headings relating to different life-history aspects, each with further subdivisions. Emphasis has been given to understanding the species in its wild habitat. For this reason data on cultivation and artificial propagation, available in horticultural books, are generally not included. Likewise information on weed control is not given. Generally, the categories are broadly interpreted and since the project aims to stimulate further investigation, we welcome the addition of extra data on any other aspects of the plant's ecology.

A 'comments' section has been deliberately avoided — for all information retrieval purposes, all ecological material should be attributable to some life history aspect of the plant or its habitat although even with our broad categories there have been problems with 'Vegetation' and 'Substrate' sections for specialised lifeforms such as mistletoes. The main purpose of this information is to give a picture of the ecology of particular species as is currently known. It is not primarily for comparative purposes although it can be used in this way. One of our original aims was to demonstrate that closely related species may have different ecologies and that to generalise within genera for example rather than look at a particular species is an over simplification. We have also included reference to individualistic information resulting from specific research that will not necessarily be available for all species.

Similarly where we have observations on the effects of factors such as drought on particular species we have included these, though we have not included a category for 'drought' because of difficulties in definition. One of our aims is to be open-ended, to point out that there are many gaps in the ecological knowledge and to indicate areas and species where future work may be particularly useful.

Botanical nomenclature

Family/Genus/Species: Names currently recognised at the National Herbarium of NSW and mostly as used in *Flora of New South Wales*.

Common name: Names used in *Flora of New South Wales*.

Life history

Growth form: Brief description.

Source: *Flora of New South Wales*.

Vegetative spread: Indication of whether localised expansion or spread is possible from an individual by rhizome, stolon, rootsucker etc. Important in determining ability of species to colonise immediate local area. Does not include vegetative distance-dispersal which is included under Establishment & Growth (diaspore).

Source: Flora descriptions, Herbarium specimens, field observations.

Longevity: Average potential life-span under natural conditions — range in years where possible, indefinite, where death is not a result of inherent growth e.g. continued rhizomatous growth. Longevity may be shorter in cultivation. There are very few references in the literature to the longevity of species or records of individual plants, particularly of the longer-lived species, yet this is an important factor in assessing importance of recruitment and changes in plant communities.

Most of the estimates given are based on the authors' judgement, based on the shape, size and growth rates of individuals, and the authors' experience in the field over 25 years, together with any historical data available. The figures given are conservative and represent minimal average ages. The authors would not be surprised if much greater ages are achieved in many cases.

Source: literature, authors' assessment from field observations.

Primary juvenile period: time taken from germination to produce first fruits or spores. Gill (1975) uses the term for the period from germination to flowering but the period to fruit maturity is more significant ecologically. Secondary juvenile period is time taken for individual to recover to produce fruit after major damage e.g. from fire, but applicable only if species regularly resprouts. The time required to accumulate a seedbank sufficient to ensure reasonable recruitment in the event of mass mortality is also an important consideration. Primary and secondary juvenile periods should not be considered as absolute and they may vary spatially as a function of habitat factors (moisture availability, nutrients etc.) and temporally (e.g. climatic variation).

Source: literature, field observations.

Reproduction: for Angiosperms, reproduction is separated into:

Flowers: predominant flower colour, flowering period — range of months and, where possible, peak month based on frequency of herbarium collections. Pollination vectors.

Fruit: fruit shape and size, particularly with respect to potential dispersal agents. Maturation period. Seed size and number.

Source: Herbarium specimens, field observations, *Flora of New South Wales*, literature.

Establishment and growth: diaspore type (including vegetative), dispersal agent. Germination requirements: seedbank presence, dormancy, growth rates, seasonality, deciduousness etc. [notes on propagation in cultivation may be given where these imply similar behaviour under natural field conditions e.g. insights into seed germination inhibition].

Source: literature, field observations.

Fire response: general response of mature plant to fire, in particular whether it generally resprouts or is killed (see also Gill 1981, Gill & Bradstock 1992). Seedling recruitment associated with fire is included under establishment and growth. Entries such as 'probably killed' mean that a species has no obvious morphological characteristics likely to assist in surviving and resprouting following fire. While species that resprout after fire may be readily noted, the death of individuals may not be observed unless the occurrence of the species in the area was well known prior to the fire.

For a given species some populations may be capable of resprouting while other populations may be killed. This may explain cases where contradictory evidence has been given though response to fire in some species may depend on fire intensity.

In view of the limited information available for many species, the categories of Gill and Bradstock have not been applied at this stage.

Source: field observations, literature.

Interaction with other organisms: symbiosis, predators, diseases etc.

Source: mainly literature.

Distribution

Status/origin: native or naturalised, region of origin, source and date of introduction/naturalisation. Naturalised species indicated by an asterisk following the botanical name.

Source: *Flora of New South Wales*, literature.

Botanical subregions: occurrence of species in botanical subdivisions of NSW, other states and countries.

Source: National Herbarium of New South Wales.

Distribution in Sydney region: main geographic regions occupied by species.

Source: Herbarium specimen records.

Selected locations: restricted to about 10 localities for each taxon reflecting natural geographical range of species in the Sydney area. Earliest collection dates are given for some species, particularly exotic species. Recent collection sites indicated where possible. Locality data must be interpreted carefully. The record may be based on an old specimen or observation record and the species may no longer be present at the site. However a knowledge of the original distribution may be important in showing up particular habitat requirements of the species.

Source: Herbarium specimen records.

Habitat

Specific data refer to Sydney area unless stated otherwise.

Habitat: brief generalised description.

Source: Herbarium specimen records, field observations.

Altitude: approximate altitudinal range (m +/- 100 m) occupied by the species,

Source: Herbarium specimen records.

Annual rainfall: approximate annual rainfall range (mm +/- 100 mm) for sites occupied by the species.

Source: Bureau of Meteorology (1979).

Typical local abundance: most frequent recordings (scale: dominant/frequent/occasional/rare)

Source: Herbarium specimen records.

Vegetation: main structural type with typical associated species where available.

Source: Herbarium specimen records, field observations, literature.

Substrate: geology, soil, moisture supply.

Soil nutrient rating scale: very fertile (high nutrient) (e.g. basalt soils)/ fertile (moderate nutrient)/ infertile (low nutrient)/ very infertile (very low nutrient) (e.g. sands).

Soil salinity scale: hypersaline/ saline/ brackish/ fresh.

Source: Herbarium specimen records, field observations, literature.

Exposure:

Exposure scale: exposed/ indifferent/ sheltered.

Shading scale: deep shade/ mid shade/ light shade/ no shade.

Source: Herbarium specimen records, field observations, literature.

Conservation

Conservation: national significance listing (Briggs & Leigh 1996), with current updating for Rare or Threatened Australian Plants (ROTAP) database maintained by NSW NPWS; inclusion on schedules of the NSW *Threatened Species Conservation Act 1995*; comments on regional significance and adequacy of conservation within Sydney area are based on authors' knowledge of the abundance of species and their primary occurrence in major conservation areas. These comments apply to the Sydney region; a species may be common or rare elsewhere. 'Probably' is used in many cases as it is the authors' views that a definite categorisation of 'adequately conserved' needs to be based on a better knowledge of the species' biology and distribution than we have at present for most species.

Source: Herbarium records, field observations, literature.

General comments on part 6

Part 6 covers 227 plant species of the family Myrtaceae, 225 native and 2 naturalised exotics *Corymbia citriodora* and *Lophostemon confertus*.

General aspects of the ecology of the Myrtaceae are covered in the accompanying paper by Peter Myerscough (page 787) who includes a list of research topics of potential interest. A particular issue to come out of our work however is the lack of information on the timing and mechanisms of seed shed in many Myrtaceae, particularly *Eucalyptus*, *Melaleuca* and *Leptospermum*. It is often assumed that these species always have a canopy-stored seedbank that is released after fire. While this is the case for some species others appear to shed seed immediately on maturity, while others may shed it gradually over a longer period. However there has been very little work done on these aspects which have relevance not only to fire ecology but in restoration and regeneration of disturbed sites where particular treatment, such as surface scraping or mowing, may need to be related to timing of seed shed.

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Dicotyledon family Myrtaceae

Acmena smithii

MYRTACEAE

Lilly Pilly

Life history

Growth form: Shrub 1-2 m high in stunted seacliff vegetation to tree 20 m high, with reddish brown flaky to almost powdery bark.

Vegetative spread: No.

Longevity: 100–200 years.

Primary juvenile period: ?5 years.

Flowers: Small, creamy white or pale pink, November–March (Floyd 1989). Flowers visited by bees (Williams & Adams 1997).

Fruit/seed: White to pale purple berry 6–12 mm diameter with single large seed. 315 fresh fruits per kilogram, 6800 dried seeds per kilogram (Floyd 1989), shed at maturity April–August. Seed viable less than 6 months (A. Bofeldt pers. comm.).

Dispersal, establishment & growth: Diaspore: fleshy fruit, vertebrate-adapted for dispersal (Westoby et al. 1990), probably bird-dispersed. Seeds germinate without treatment, 70% germination of fresh seed in 24–120 days (Floyd 1989). Viability of dried seed more than 1 year at room temperature. No soil-stored seedbank, seedlings found under adult plants, but possibly short-lived. Seedlings lack lignotubers (Hyland 1983). New red foliage growth (Spring). Quick growth rate, coloniser.

Fire response: Resprouts from base and with epicormic shoots after high intensity fire (1/1994) at Deep Creek (L.McD.).

Interaction with other organisms: Food plant of Topknot Pigeon, Wonga Pigeon, Australian King Parrot, Crimson Rosella, Pied Currawong, Rose-crowned Fruit-dove, Satin Bowerbird, Superb Fruit-dove (Floyd 1989). Fruit eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Moth larvae *Agriophara horridula* feed in shelter formed between leaves, moth larvae *Cryptophasa pultenae* bore into stems (Common 1990).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT NWS CWS; Qld, Vic.

Distribution Sydney area: Widespread.

Select locations: CC: Wyong, Calga, Avoca, Wisemans Ferry, Kurrajong, Eastwood, Northbridge, Fairfield (1886), Garie, Mt Kiera, Cambewarra. CT: Coricudgy, Mt Wilson, Blackheath, Robertson, Wingello.

Habitat

Habitat: Sheltered gullies, watercourses, headlands and seacliffs.

Altitude: 0–1000 m **Annual rainfall:** 900–1800 mm

Typical local abundance: Occasional–frequent.

Vegetation: Rainforest e.g. with *Doryphora sassafras*, *Acacia melanoxylon*; stunted coastal rainforest and scrub; moist eucalypt forest e.g. with *Eucalyptus saligna*, *Syncarpia glomulifera*.

Substrate: Clay loams on shale, basalt, alluvium, enriched sandstone, beach sands, fertile–very fertile soils. Locally better moisture conditions, watertable mostly high, moisture supply intermittent, fresh. pH 4–6 (see Payne 1987 for data on soils in Gully Rainforest at Gosford). On Bass Point Sandstone, Quaternary alluvium, Coal Measures, Blow Hole Latite, Budgong Sandstone, Bumbo Latite in Illawarra (M. Robinson pers. comm.).

Exposure: Mid to full shade.

Conservation

Conservation: Widespread, adequately conserved in Illawarra except for some littoral rainforest sites (M. Robinson pers. comm.), probably adequately conserved elsewhere.

Angophora bakeri

MYRTACEAE

Narrow-leaved Apple

Life history**Growth form:** Tree to 10 m high with rough bark; leaves narrow, opposite, 6–10 cm long.May hybridise with *Angophora hispida*.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** Creamy white, December–January with spasmodic flowering in other months.Native bees and honeybees are probably the most significant insect pollinators with large flies and large beetles also playing an important role; butterflies and smaller beetles also effect some pollination (P. Kubiak pers. comm.). Jewel Beetles *Stigmodera bella*, *S. bifasciata*, *S. cruenta*, *S. kerremansi*, *S. kirbyi*, *S. scalaris* collected from flowers (Hawkeswood 1978).**Fruit/seed:** Ribbed, hard woody capsule 8–10 mm long; seeds dark brown, oval, flat with crinkled papery texture when shed (Leach 1986).**Dispersal, establishment & growth:** Diaspore: seed, ant dispersed (Auld 1986).

No dormancy mechanism or soil-stored seedbank.

Fire response: Resprouted from base and trunk after high intensity fire (1.94 at Lane Cove), flowering within 1 year and releasing seed from capsules after 15 months (P. Kubiak pers. comm.).**Interaction with other organisms:** *Angophora bakeri* is probably important in supporting the initial post-fire re-establishment of nectar-dependent insect populations and is probably a significant source of pollen for native bees (P. Kubiak pers. comm.).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC CT.**Distribution Sydney area:** Widespread Port Stephens to Nowra, west to Katoomba.**Select locations:** CC: Putty, Howes Valley, Wisemans Ferry, Pennant Hills, Lane Cove, Clyde, Minto, Castlereagh NR, Blaxland, Woronora River. CT: Kedumba Pass, Kings Tableland, Megalong Valley, Meryla Pass.**Habitat****Habitat:** Ridgetops and upper slopes.**Altitude:** 0–1000 m**Annual rainfall:** 700–1200 mm**Typical local abundance:** Frequent.**Vegetation:** Low woodland e.g. with *Eucalyptus piperita*, *Corymbia gummifera*, *Eucalyptus eximia*, *E. punctata*, *E. sparsifolia*; woodland e.g. with *Eucalyptus crebra*, *E. sparsifolia*, *E. sideroxylon*, *E. punctata* (lower Coxs River); heath e.g. with *Eucalyptus stricta*, *Eucalyptus ligustrina*, *Allocasuarina nana*.**Substrate:** Sandy soils on sandstone, quartzite, sandy loam over Tertiary alluvium, low nutrients, well-drained.**Exposure:** Full sun.**Conservation****Conservation:** Widespread and probably adequately conserved e.g. Blue Mountains NP, Yengo NP, Morton NP.

Angophora costata

MYRTACEAE

Smooth-barked Apple, Sydney Red Gum, Rusty Gum

Life history

Growth form: Tree to 30 m high with twisted branches, smooth bark shedding in scales, pink, grey or cream about October–November. Hybridises with *Angophora hispida*.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Creamy white, November–December, with spasmodic flowering in other months. Honeybees native bees, beetles, flies, butterflies and moths probably all play a role in pollination (P. Kubiak pers. comm.).

Fruit/seed: Ribbed woody capsule 12–15 mm diam. Seeds 5.9 mm long (Drake 1981), dark brown, oval, flat, with crinkled papery texture when shed (Leach 1986), released from hard woody capsule at maturity, March–May.

Dispersal, establishment & growth: Diaspore: seed, no special morphology for dispersal (Westoby et al. 1990). Water and wind-dispersed locally (Carr et al. 1992). No dormancy mechanism or soil-stored seedbank, germinates readily without special treatment, seedlings common in November. Recruitment into adult populations is probably gradual though recruitment probably best within? 10 years of fire. New growth of foliage in Spring.

Fire response: Resprouts from epicormic buds and lignotubers. Saplings resprouting from trunks and from base within one month, older trees beginning to produce shoots from upper branches one month after high intensity fire (1 / 1994, L.McD.), seedlings seen within 9–10 months (at Narrabeen) (P. Kubiak pers. comm.).

Interaction with other organisms: *Angophora costata* is probably an important tree species supporting nectar-dependent insects. Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Host to mistletoe *Dendrophthoe vitellina* (P. Kubiak pers. comm.). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Bracket fungus (on damaged trunk) and mud-covered runway of termite *Nasutitermes walkeri* on trunk of living tree (P. Kubiak pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT.

Distribution Sydney area: Widespread, coastal sandstone plateaus and Blue Mountains.

Select locations: CC: Mountain Lagoon, Maroota, Woy Woy, Palm Beach, Turramurra, Mosman, Belrose, Bondi (1885), Croydon Park (1915), Kurnell, Bundeena, Minto, Orangeville. CT: Mt Tomah, Wentworth Falls, Hill Top, Wanganderry.

Habitat

Habitat: Sandstone hillsides.

Altitude: 0–900 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Frequent–dominant.

Vegetation: Mainly open-forest and woodland e.g. with *Eucalyptus piperita*, *Syncarpia glomulifera*, *Allocasuarina torulosa* (e.g. Sydney Sandstone Gully Forest of Benson & Howell 1994); open-forest e.g. with *Eucalyptus botryooides* (e.g. North Entrance Red Gum Forest, map unit 9k of Benson 1986); hind dune scrub e.g. with *Monotoca elliptica*, *Macrozamia communis*.

Substrate: Deep sandy soils on sand dunes or sandy soils on sandstone, occasionally on shallow Wianamatta Shale, moderate nutrients. Heavy crown on sandstone soil, slender, thinner crown on shale soils (Blakely Herbarium specimen 1915). Clay soils from Narrabeen series in Illawarra (A. Bofeldt pers. comm.).

Exposure: Full sun to light shade.

Conservation

Conservation: Adequately conserved e.g. in Ku-ring-gai Chase NP, Royal NP, Blue Mountains NP. Trees susceptible to drainage changes from adjacent development. May also die from drought — street and young plants affected first (J. Howell pers. comm.).

Angophora crassifolia**MYRTACEAE****Life history**

Growth form: Tree to 15 m high, with persistent, fibrous bark; leaves opposite, distinguished from *A. bakeri* by leathery leaves, larger fruit, longer flower stalks, lanceolate juvenile leaves (Johnson & Hill 1990).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Creamy white, December–January.

Fruit/seed: Thin, hard woody capsule 10–15 mm long, releasing seeds dispersed close to adult plant at maturity. Fruiting period March, seed shed immediately. Seeds dark brown, oval, flat, with crinkled papery texture when shed (Leach 1986).

Dispersal, establishment & growth: Diaspore: seed, dispersed close to adult plant; no dormancy, no soil-stored seedbank.

Fire response: Resprouts at ground level or below. Secondary juvenile period 12–14 months (fruiting abundantly after fire, Bantry Bay 1991).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Restricted to the Ku-ring-gai Plateau region between Port Jackson and the Hawkesbury River.

Select locations: CC: Coal and Candle Creek, Terrey Hills, Deep Creek, St Ives, Frenchs Forest, Middle Harbour, Northbridge, Manly (1885).

Habitat

Habitat: Ridges and hillsides.

Altitude: 0–200 m **Annual rainfall:** above 1200 mm

Typical local abundance: Frequent.

Vegetation: Low forest and woodland e.g. with *Eucalyptus sieberi*, *E. piperita*, *E. haemastoma*, *Angophora costata*.

Substrate: Usually associated with remnants of ironstone-rich soils over siliceous Hawkesbury Sandstone, low nutrients, well-drained.

Exposure: Full sun to light shade.

Conservation

Conservation: Local endemic species. Large populations of this species occur in Ku-ring-gai Chase National Park and nearby reserves, but their proximity to the Sydney metropolitan region means that these must be considered vulnerable (Johnson & Hill 1990). Coded 2RCa on national rare species list (Briggs & Leigh 1996).

Angophora euryphylla**MYRTACEAE****Life history**

Growth form: Tree to 25 m high with crooked, gnarled branches and smooth bark shedding in scales, pink, grey or cream; leaves opposite, 12–19 cm long. Distinguished from *A. costata* by larger fruit and longer flower stalk (Johnson & Hill 1990).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Creamy white, November.

Fruit/seed: Ribbed hard woody capsule 16–21 mm long covered with hairs and bristle-glands; seeds dark brown, oval, flat, with crinkled papery texture when shed (Leach 1986).

Dispersal, establishment & growth: Diaspore: seed.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Putty–Macdonald area.

Select locations: CC: Howes Mtn, Howes Valley, Putty, Wattagan Creek, Judge Dowling Range, Mangrove Creek.

Habitat

Habitat: Sandstone outcrops, ridges.

Altitude: 0–500 m **Annual rainfall:** 900–1200 mm

Typical local abundance: Frequent–dominant.

Vegetation: Woodland e.g. with *Corymbia eximia*, *C. gummifera*, *Eucalyptus punctata*, *E. sparsifolia*, *E. beyeriana*, *E. paniculata*, *E. umbra*, *E. acmenoides*; moist open-forest e.g. with *Eucalyptus deanei*, *E. piperita*.

Substrate: Shallow, skeletal soils on sandstone ridges (Johnson & Hill 1990), low nutrients, well-drained.

Exposure: Full sun to light shade.

Conservation

Conservation: Local endemic, restricted to small area between Putty and Wollombi and south along Judge Dowling Range (Harden 1991). Although distributed over a limited area this species is locally abundant and much of the range lies within national parks and reserves e.g. Yengo NP; not considered to be at risk (Johnson & Hill 1990).

Angophora floribunda

MYRTACEAE

Rough-barked Apple, Apple

Life history

Growth form: Tree to 30 m high with gnarled, crooked branches and persistent, fibrous bark; leaves opposite, 8–12 cm long. Hybridises with *Angophora subvelutina*.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Creamy white, November–March. Jewel Beetles *Curis caloptera*, *Stigmodera andersoni*, *S. terminatis*, *S. vigilans* collected from flowers (Hawkeswood 1978).

Fruit/seed: Ribbed hard woody capsule 7–10 mm long, seeds 5 mm diam., dark brown, oval, flat, with crinkled papery texture (Leach 1986), shed at maturity July–October. Prakash (1969) reported seed shed 2 months after flowering.

Dispersal, establishment & growth: Diaspore: seed, no special morphology (Westoby et al. 1990), probably wind-dispersed locally i.e. 20 m. No dormancy mechanism, germinates without special treatment. Growth rate slow. Coloniser of open sites.

Fire response: Resprouts from epicormic shoots.

Interaction with other organisms: Foodplant of moth larvae *Epidesmia chilonaria* (Coupar & Coupar 1992), Cup Moth *Doratifera casta* (Common 1990). Host plant of Cerambycid longicorn beetles *Agrianome spinicollis* (Hawkeswood & Dauber 1991), *Paroplites australis* (Hawkeswood 1992b), *Adrium artifex* (Hawkeswood 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Foliage foraged by White-plumed Honeyeater (New England Tablelands Chan 1990). Nesting site for Regent Honeyeater (M. Robinson pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT NWS CWS NWP; Qld, Vic.

Distribution Sydney area: Widespread.

Select locations: CC: Howes Valley, Morisset, Patonga, Avalon, Hornsby, Castle Hill, Ryde, Smithfield, Kangaroo Valley, Seven Mile Beach. CT: Gospers Mountain, Winburndale, Wentworth Falls, Colo Vale, Bundanoon.

Habitat

Habitat: Mainly creek banks and floodplains.

Altitude: 0–1000 m **Annual rainfall:** above 700 mm

Typical local abundance: Frequent–dominant.

Vegetation: Open-forest e.g. with *Casuarina glauca*, *Eucalyptus globoidea*, *E. pilularis*, *E. blakelyi*, *E. tereticornis*, *E. mannifera*, *Allocasuarina torulosa*, *E. punctata*, *Eucalyptus umbra*; moist forest e.g. with *Eucalyptus saligna*; closed forest e.g. with *Acmena smithii*, *Glochidion ferdinandi*, *Schizomeria ovata*, *Ficus coronata* and emergent *Eucalyptus botryoides*, *E. paniculata*, *Syncarpia glomulifera*.

Substrate: Mainly deep sandy alluvial soils; often associated with shales, or less commonly sandstones, sometimes on basalt, low to medium nutrients. Watertable mostly low, moisture supply intermittent, fresh. On Quaternary alluvium, Budgong Sandstone, Berry Siltstone in Illawarra (M. Robinson pers. comm.).

Exposure: Light shade–full sun.

Conservation

Conservation: A widespread species whose floodplain habitat has been mainly cleared or highly altered. Often persists as old trees in pastures, any young plants being grazed out. Poorly conserved in Illawarra (M. Robinson pers. comm.). Conservation status elsewhere unknown.

Angophora hispida

MYRTACEAE

Dwarf Apple, Scrub Apple

Life history

Growth form: Mallee or small tree to 7 m high, with persistent, grey, fibrous-flaky bark, may hybridise with *Angophora costata*.

Vegetative spread: No.

Longevity: 50–100 years

Primary juvenile period:

Flowers: Creamy white, November–January. Flowering synchronous, restricted to first and second season after fire (Auld 1987). An abundant and diverse array of insects visit the flowers; honeybees, native bees, beetles and flies are probably the most important insect pollinators, with moths and wasps playing a lesser role (P. Kubiak pers. comm.).

Fruit/seed: Ribbed woody capsule 14–20 mm diam. Seeds dark brown, oval, flat, with crinkled papery texture when shed (Leach 1986), weight 24 mg (Mowatt & Myerscough 1983), released at maturity February–March.

Dispersal, establishment & growth: Diaspore: seed, no special dispersal morphology (Westoby et al. 1990). Dispersal less than 5 m from parent plant, most under parent canopy, seed movement by ants minimal; 100% seed viability for up to 6 months, no evidence of dormancy, no soil-stored seedbank; growth of seedlings and development of lignotuber slow, 8-year old plants small with small lignotubers close to soil surface (Auld 1987). Poor experimental growth response to increased nutrient availability; soil P level 53 ppm in natural habitat e.g. at Royal NP (Mowatt 1981).

Fire response: One of the fastest resprouting species in the community where it occurs and if stem is not killed forms an extensive canopy 6–8 months after fire; resprouts from lignotuber or with epicormic shoots but plants less than 8–9 years old may not have a large enough lignotuber to survive fire (Auld 1987). Flowering within 1 year of fire with seed shedding within 15 months; some seedlings seen within 2 years (P. Kubiak pers. comm.). Dependent on fire for extensive regrowth and flowering (Leach 1986, Auld 1990). Plants may senesce in sites unburnt for a long period e.g. 20 years.

Interaction with other organisms: Beetles feed on nectar, smaller beetles and flies feed on honey: buprestid beetles *Stigmodera variabilis*, rose chafers *Eupoecila australasiae*, *Cacochroa gymnopleura*, *Diaphonia dorsalis*, *Macrophana brunnipes*, fine longicorns *Ilethysis* species, *Tragocercis* species, soldier beetles *Telephorus* species, and smaller lamellicorns *Phyllotocus* species (Maiden & Campbell 1895). Jewel beetle *Stigmodera variabilis* found on flowers during summer (Hawkeswood 1987b). Foodplant of Wattlebird, Noisy Miner, ants, wasps, flies, moths, butterflies, Spittle Bug (Cercopoidea), and 16 species of beetles from at least 7 different families; an important source of pollen for native bees.

Angophora hispida is probably important in sustaining populations of nectar-dependent insects as they re-establish in burnt bushland (P. Kubiak pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Coast and adjacent plateaus.

Select locations: CC: Wheeny Creek, Putty Road, Pearl Beach, Lindfield, North Head, Bradleys Head, Bundeena, Holsworthy, O'Hares Creek (Keith 1994).

Habitat

Habitat: Heath on Hawkesbury sandstone, exposed rocky sites.

Altitude: 0–300 m

Annual rainfall: 800–1600 mm

Typical local abundance: Frequent–dominant.

Vegetation: Open woodland and scrub e.g. with *Eucalyptus racemosa*, *E. haemastoma*, *Corymbia gummifera*, *Angophora bakeri*; open-heath e.g. with *Banksia ericifolia*, *Allocasuarina distyla*, *Eriostemon australasius*, *Dillwynia floribunda*, *Banksia oblongifolia*, *Banksia marginata*, *Petrophile pulchella* (Auld 1987); coastal sandstone heath of Benson & Howell 1994.

Substrate: Shallow sandy soils on sandstone, very low nutrients.

Exposure: Full sun, needs high light conditions for good growth.

Conservation

Conservation: Local endemic confined to the Sydney region. O'Hares Creek southern limit (Keith 1994). Probably adequately conserved.

Angophora inopina**MYRTACEAE****Life history**

Growth form: Tree to 8 m high, often multi-stemmed, with persistent shortly fibrous bark.

Vegetative spread: No.

Longevity: More than 200 years (B. Branwhite pers. comm.).

Primary juvenile period:

Flowers: Creamy white, December–January. Probably insect-pollinated. Pollinated by ?bats (B. Branwhite pers. comm.).

Fruit/seed: Ribbed 3-locular hard woody capsule. Seeds dark brown, oval, flat, with crinkled papery texture when shed (Leach 1986).

Dispersal, establishment & growth: Diaspore: seed, with short distance dispersal.

Fire response: Resprouts from base and epicormic buds (B. Branwhite pers. comm.).

Interaction with other organisms: Jewel Beetles found on trees and Leaf hoppers seen on flowers (B. Branwhite pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Charmhaven–Wyee.

Select locations: CC: Charmhaven, Vales Point, Doyalson.

Habitat

Habitat: Eucalypt woodland.

Altitude: 0–100 m

Annual rainfall: 1100–1200 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt woodland e.g. with *Eucalyptus haemastoma*, *Corymbia gummifera*, *Eucalyptus capitellata* and dense shrub understorey (Hill 1997) e.g. with *Banksia oblongifolia*, *Lambertia formosa*, *Hakea dactyloides* (Hedley 1997).

Substrate: Deep white sandy loam to clay loam on sandstone with some gravelly laterite, low nutrients, periodically water-logged.

Exposure:

Conservation

Conservation: Rare local endemic, restricted to Charmhaven and Wyee, geographic range less than 100 km, population size not accurately known (2R-) (Hill 1997). Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Management recommendations given in Hedley (1997).

Angophora subvelutina

MYRTACEAE

Broad-leaved Apple

Life history

Growth form: Crooked tree to 20 m high with dense crown and persistent rough, flaky bark; leaves broad at base with very short petiole.

Vegetative spread: No.

Longevity: More than 200 years.

Primary juvenile period:

Flowers: Creamy white, November–January. Probably insect-pollinated.

Fruit/seed: Hard woody ribbed capsule, 7–10 mm long, shedding seeds at maturity, March–April (Wightman 1992). Seeds dark brown, oval, flat, with crinkled papery texture (Leach 1986).

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. 20 m. Seeds germinate without treatment (90% in 5 days) and are not inhibited by darkness (Wightman 1992), no soil-stored seedbank. Growth rate greater in summer; growth rate increased with greater supply of nutrient (Mowatt 1981).

Fire response: Resprouts from epicormic shoots.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT; Qld.

Distribution Sydney area: Mainly Hawkesbury–Nepean floodplain.

Select locations: CC: Richmond, St Marys, Parramatta Park (1910), Prospect, Georges River, Mulgoa, Cobbitty, Camden, The Oaks, Lake Illawarra. CT: Kanimbla Valley.

Habitat

Habitat: Floodplain, creekbanks.

Altitude: 0–800 m

Annual rainfall: 700–1000 mm

Typical local abundance: Frequent.

Vegetation: Floodplain forest e.g. with *Eucalyptus baueriana*, *E. tereticornis*, *E. amplifolia*, *E. botryoides* X *saligna* (Riverflat Forest of Benson 1992).

Substrate: Deep fertile alluvial soils, also associated with shale, medium to high nutrients. Watertable mostly low, moisture supply intermittent, fresh.

Exposure: Light shade–full sun.

Conservation

Conservation: Most floodplain forests have been cleared or severely degraded, local populations vulnerable.

Austromyrtus acmenoides

MYRTACEAE

Scrub Ironwood

Life history

Growth form: Shrub or small crooked tree 15–18 m high.

Vegetative spread: No.

Longevity: More than 50 years (A. Bofeldt pers. comm.).

Primary juvenile period: 5–10 years (A. Bofeldt pers. comm.).

Flowers: White, November–April.

Fruit/seed: Black berry, 4–6 mm diam., with hard-coated seeds. Fruit mature March–June (A. Bofeldt pers. comm.).

Dispersal, establishment & growth: Diaspore: fleshy fruit, bird-dispersed, seed viability less than 3 months, germination 2–6 weeks (A. Bofeldt pers. comm.).

Fire response: Probably killed but may resprout from rootstock if fire not severe (A. Bofeldt pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld

Distribution Sydney area: Illawarra; Mt Keira to Rose Valley (A. Bofeldt pers. comm.).

Select locations: Wollongong (Avondale, Berkeley Hill, Whispering Gallery, Jamberoo, A.B.)

Habitat

Habitat: Rainforest on sheltered slopes, on rocky scree slopes, in gullies, and along water courses (A. Bofeldt pers. comm.).

Altitude: 0–100 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Rare.

Vegetation: Understorey in dry rainforest and subtropical rainforest e.g. with *Mallotus philippinensis*.

Substrate: Clay soils on Coal Measures, latite, high nutrients, well-drained but can cope with dry periods, becoming temporarily deciduous (A. Bofeldt pers. comm.).

Exposure: Deep shade (A. Bofeldt pers. comm.).

Conservation

Conservation: Regionally rare in Illawarra region only, 3 populations known with less than 10 plants (Mills 1988). Rose Valley (near Gerringong) is southern geographical limit, no more than 150 plants seen in Illawarra region, populations are in small rainforest remnants, not conserved and threatened by clearing, grazing and development (A. Bofeldt pers. comm.).

Austromyrtus tenuifolia**MYRTACEAE****Life history**

Growth form: Bushy shrub to 1–2 m high, with fine flaky bark.

Vegetative spread: No.

Longevity: ?25–50 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: White, November–December.

Fruit/seed: Edible berry 4–5 mm diam., white with small dark spots; 2–10 hard-coated seeds, January–February.

Dispersal, establishment & growth: Diaspore: berry, bird-dispersed e.g. Currawongs (Wallace 1997).

Fire response: Resprouts from base after high intensity fire (at Bantry Bay 12/1990, L.McD.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Coast and adjacent plateaus.

Select locations: CC: Colo Gorge, Bowens Creek, Maroota, Mooney Mooney Creek, Hornsby, Devlins Creek (Cheltenham), Frenchs Forest (L.McD.), Kentlyn, Bents Basin, Warragamba Dam, (Winifred Falls, A. B).

Habitat

Habitat: Along creeks, in gullies.

Altitude: 0–300 m **Annual rainfall:** 900–1200 mm

Typical local abundance: Occasional.

Vegetation: Riparian scrub e.g. with *Tristaniopsis laurina*, *Lomatia myricoides*, *Tristania neriiifolia*, *Trococarpa laurina*, *Ceratopetalum apetalum*, *Gleichenia dicarpa*; margins of warm-temperate rainforest (A. Bofeldt pers. comm.).

Substrate: Sandstone outcrops on banks and islands along creeks, low nutrients, permanent moisture but well-drained.

Exposure: Sheltered sites, full sun to light shade e.g. light gaps in rainforest.

Conservation

Conservation: Local endemic restricted to Sydney area. Long-term viability may be threatened by competition from exotics e.g. *Ageratina riparia* in nutrient enriched creeks e.g. Devlins Creek, Lane Cove River.

Babingtonia densifolia (*Baeckea densifolia*)

MYRTACEAE

Life history

Growth form: Shrub to 1.5 m high, with grey scaly persistent bark and small crowded narrow leaves 2–4 mm long.

Vegetative spread:

Longevity:

Primary juvenile period: 3.5 years after high intensity fire (P. Kubiak pers. comm.).

Flowers: White, November–April, peak April. Probably pollinated by native bees (P. Kubiak pers. comm.).

Fruit/seed: Capsule 2 mm long., with brown, angular seeds 1 mm long, April–June.

Dispersal, establishment & growth:

Fire response: Killed by high intensity fire at Lane Cove and Narrabeen Lake (1/94 P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: ?NC CC ?NT CT NWS CWS ?NWP; Qld.

Distribution Sydney area: Widespread.

Select locations: CC: Yengo NP, Mosman (1902), Minto, Douglas Park, Waterfall, Avon Dam. CT: Coorongooba Creek, Gaspers Mountain, Newnes SF, Woodford, Clarence.

Habitat

Habitat: Ridges and plateaus.

Altitude: 0–1000 m

Annual rainfall: 800–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Heath e.g. with *Allocasuarina nana*; or open woodland e.g. with *Angophora costata*, *Eucalyptus sparsifolia*, *Angophora bakeri*, *Eucalyptus fibrosa*, *E. bensonii*, *E. stricta*.

Substrate: Sandy loam on sandstone, sometimes with shale influence, low nutrients.

Exposure:

Conservation

Conservation: Probably adequately conserved e.g. Royal NP, Wollemi NP.

Babingtonia virgata (*Baeckea virgata*)

MYRTACEAE

Life history

Growth form: Shrub to 4 m high, with leaves 7–24 mm long.

Vegetative spread:

Longevity: ?15–50 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: White, spring–summer (Robinson 1991), insect-pollinated (Webb 1986). Probably pollinated by honeybees, flies, beetles and wasps (P. Kubiak pers. comm.).

Fruit/seed: Capsule 2.5–3 mm diam., with flattened wedge-shaped seeds.

Dispersal, establishment & growth: Water-dispersed (Carr et al. 1992).

Fire response: Resprouted from base after high intensity fire (1/1994) at Lane Cove, secondary juvenile period less than 2.5 yrs (P. Kubiak pers. comm.).

Interaction with other organisms: Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Commercially grown for cut flowers or foliage (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC ?NT CT ST; Qld, Vic., N. Cal.

Distribution Sydney area: Mainly Nepean River area.

Select locations: CC: Maroota, Grose River, Glenbrook Creek, Nortons Basin, Elderslie, Menangle, Yerranderie, (Kiama, A.B.). CT: Kanangra-Boyd.

Habitat

Habitat: Creek banks; shallow rocky sites, gully slopes (A. Bofeldt pers. comm.).

Altitude: 0–1200 m **Annual rainfall:** 800–1500 mm

Typical local abundance: Rare to occasional.

Vegetation: Riparian vegetation e.g. with *Eucalyptus elata*, *Acacia decurrens*; woodland with *Eucalyptus sieberi*, *E. blaxlandii* (Kanangra).

Substrate: Sandy alluvial soil or sand over sandstone, also sandy soil on granite (Kanangra). On Latite in Illawarra, low to high nutrients (A. Bofeldt pers. comm.).

Exposure: Full sun–semi-shade.

Conservation

Conservation: Conservation status generally unknown. Not conserved in Illawarra.

Backhousia myrtifolia**MYRTACEAE**

Grey Myrtle, Ironwood

Life history

Growth form: Bushy shrub about 6 m high, but may grow to tree 15 m high in rainforest or shrub 1 m high in seacliff communities. May be mistaken for weed *Ligustrum sinense*.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Yellowish–white, November–February, peak December.

Fruit/seed: Dry, thin-walled, one-seeded, indehiscent capsule 6 mm long, shed at maturity.

Dispersal, establishment & growth: Diaspore: fruit, wind-dispersed locally (Westoby et al. 1990). No seed dormancy, seedling recruitment and subsequent death under mature plants observed at Oatley (G. Quint pers. comm.). Growth rate slow. Coloniser of open sites. Stems die back during drought (M. Robinson pers. comm.).

Fire response: Foliage generally killed and resprouts from base. Large plants resprouted from trunk after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Interaction with other organisms: Host to epiphytic orchid *Dendrobium aemulium* (Bishop 1996).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST CWS; Qld.

Distribution Sydney area: Widespread.

Select locations: CC: Howes Valley, Mangrove Creek, Bobbin Head, Dennistone, Kentlyn, Camden, Stanwell Park, Shellharbour, Bomaderry Creek, Glen Alice. CT: Kowmung, Wombeyan Caves, Bungonia.

Habitat

Habitat: Close to streams and steep rocky gullies, cliffs.

Altitude: 0–1000 m **Annual rainfall:** above 700 mm

Typical local abundance: Frequent–dominant.

Vegetation: Margins of warm-temperate and dry rainforest, often locally dominant in sheltered gullies, seacliffs. Open-forest understorey e.g. with *Eucalyptus quadrangulata*, *E. muelleriana*, *Syncarpia glomulifera* or *Eucalyptus tereticornis*, *E. longifolia*, *Melaleuca styphelioides* (at Yallah) (M. Robinson pers. comm.). Forms thickets along watercourses.

Substrate: Sandstone gullies and on sandy alluvium along creeks, soils infertile–fertile. Watertable mostly low, moisture supply intermittent, fresh. On Budgong Sandstone, Berry Siltstone, Quaternary alluvium, Cambewarra Latite, Illawarra Coal Measures in Illawarra (M. Robinson pers. comm.).

Exposure: Light shade–full sun.

Conservation

Conservation: Widespread and probably adequately conserved.

Baekkea brevifolia

MYRTACEAE

Life history

Growth form: Shrub to 1 m high with very small leaves. Bark grey, fibrous (Bean 1997b).

Vegetative spread: No.

Longevity: 25–60 years (D. Keith pers. comm.).

Primary juvenile period:

Flowers: White–pink, January–April.

Fruit/seed: Cylindrical capsule 2 mm diam. with angular seeds.

Dispersal, establishment & growth: Diaspore: seed, no special morphology for dispersal (Westoby et al. 1990).

Recruitment mainly after fire (D. Keith pers. comm.) from soil-stored seedbank (Keith 1991).

Fire response: Killed by fire (Bell pers. comm., D. Keith pers. comm.). Resprouted from base and root suckering after high intensity fire at Narrabeen Lake (1/94); some less-scorched plants resprouted from stems (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST.

Distribution Sydney area: Central coast and adjacent tablelands.

Select locations: CC: Woy Woy, Berowra, Frenchs Forest. CT: Mt Darcy, Mt Hay, Woodford Range.

Habitat

Habitat: Rock platforms.

Altitude: 0–1000 m **Annual rainfall:** above 1000 mm

Typical local abundance: Frequent.

Vegetation: Heath e.g. with *Allocasuarina nana*, *Eucalyptus stricta*.

Substrate: Sandstone rock platforms, in depressions, sandy, shallow, low nutrient soil. Watertable mostly low, moisture supply intermittent, fresh.

Exposure: Exposed situations.

Conservation

Conservation: Probably adequately conserved.

Baekkea diosmifolia

MYRTACEAE

Life history

Growth form: Shrub to 0.6 m high, with small roundish to oblong leaves 2–5 mm long.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, December–March. Probably pollinated by native bees and flies and possibly beetles and wasps (P. Kubiak pers. comm.).

Fruit/seed: Capsule 2 mm diam, with seeds 0.5 mm long, April–October.

Dispersal, establishment & growth: No special morphology for dispersal (Westoby et al. 1990).

Fire response: Resprouts (Benson 1981, 1985, Myerscough et al. 1995). Secondary juvenile period about 1 year (P. Kubiak pers. comm.).

Interaction with other organisms: Shoot damage by rabbits but plants not eaten (P. Kubiak pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT ST; Qld.

Distribution Sydney area: Coast and adjacent plateaus, lower Blue Mountains.

Select locations: CC: East Kurrajong, South Maroota, Woy Woy, Galston Gorge, Oxford Falls, North Head, Loftus, Stanwell Park, Llandillo, Glenbrook, Thirlmere Lakes, Hill Top, Carrington Falls.

	Habitat
Habitat: Wet heath.	
Altitude: 0–700 m	Annual rainfall: 900–1400 mm
Typical local abundance: Occasional–frequent.	
Vegetation: Low open-woodland e.g. with <i>Corymbia gummifera</i> , <i>Angophora hispida</i> , <i>Eucalyptus haemastoma</i> , <i>Banksia ericifolia</i> ; to heath e.g. with <i>Allocasuarina distyla</i> , <i>Leptospermum trinervium</i> , <i>Banksia oblongifolia</i> ; also seacliff heath (at North Head).	
Substrate: Sandy soil on sandstone, Tertiary alluvium (at Llandillo), low nutrients.	
Exposure:	
	Conservation
Conservation: Widespread, well conserved species e.g. Ku-ring-gai Chase NP, Royal NP.	

Baeckea imbricata**MYRTACEAE**

	Life history
Growth form: Shrub to 1 m high, with broad roundish leaves 3–6 mm long. Intergrades occur with <i>B. diosmifolia</i> with narrower leaves and more toothed leaf margins (Harden 1991). Bark grey, scaly (Bean 1997b).	
Vegetative spread: No.	
Longevity: More than 60 years (D. Keith pers. comm.).	
Primary juvenile period: Primary juvenile period less than 7 years (D. Keith pers. comm.), 3.5 yrs after high intensity fire (P. Kubiak pers. comm.).	
Flowers: White, November–May.	
Fruit/seed: Capsule 2 mm diam, with angular seeds. Fruit February–May, not held on plant (Bean 1997b).	
Dispersal, establishment & growth: Diaspore: seed, no special morphology for dispersal (Westoby et al. 1990). Recruitment mainly after fire from soil-stored seedbank (Keith 1991).	
Fire response: Resprouts from subterranean buds, secondary juvenile period 2 years (D. Keith pers. comm.). Killed after high intensity fire at Lane Cove and Narrabeen Lake (1/94 P. Kubiak pers. comm.).	
Interaction with other organisms:	
	Distribution
Status/origin: Native.	
Botanical subregions: NC CC SC CT ST; Qld.	
Distribution Sydney area: Mainly coast.	
Select locations: CC: Brisbane Water NP, Cowan, Oxford Falls, Bondi, Centennial Park, Kogarah, Kurnell, Waterfall, Bulli, Bass Point. CT: Woodford (1915), Hazelbrook (1899).	
	Habitat
Habitat: Often in damp situations.	
Altitude: 0–1000 m	Annual rainfall: 1100–1600 mm
Typical local abundance: Frequent.	
Vegetation: Coastal heath and scrub e.g. with <i>Banksia ericifolia</i> , <i>Allocasuarina distyla</i> , <i>Epacris microphylla</i> (Coastal Sandstone Shoreline Heath of Benson & Howell 1994).	
Substrate: Sandy soil on sandstone, basalt headland (Bass Point), low–high nutrients, often poorly-drained.	
Exposure: Tolerant of salt spray.	
	Conservation
Conservation: Conserved on coast but status in Blue Mountains not known as not recorded there since 1915.	

Baeckea linifolia

MYRTACEAE

Life history

Growth form: Shrub to 3 m high, with e.g. grey, scaly, persistent bark (Bean 1997b).

Vegetative spread: No.

Longevity: More than 60 years (D. Keith pers. comm.).

Primary juvenile period: Primary juvenile period more than 7 years (D. Keith pers. comm.).

Flowers: White, December–June, peak January. Native bees are probably the main pollinators with small butterflies and wasps also involved (P. Kubiak pers. comm.).

Fruit/seed: Capsule 2 mm long, seeds 0.6 mm long, probably maturing and dropping within six months. Fruit mature March–December (Bean 1997b).

Dispersal, establishment & growth: Soil-stored seedbank (Keith 1991).

Fire response: Resprouted vigorously from base after high intensity fire at Bantry Bay (12/90 L.McD.), secondary juvenile period about 3.5 yrs (P. Kubiak pers. comm.).

Interaction with other organisms: Commercially grown for cut flowers or foliage (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST; Qld, Vic.

Distribution Sydney area: Mainly Coast and Upper Blue Mountains.

Select locations: CC: Woy Woy Creek, Narrabeen, Heathcote, Clifton, Maddens Plains, Barren Grounds, Linden. CT: Lawson, Wentworth Falls, Katoomba, Newnes Plateau, Hilltop, Bundanoon.

Habitat

Habitat: Gullies in damp places, creek banks, often near waterfalls.

Altitude: 0–1000 m

Annual rainfall: 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Common in wet heath and scrub, often with *Leptospermum grandifolium*, *L. juniperinum*, *Hakea teretifolia*, *Banksia oblongifolia*; also on moist cliff lines e.g. with *Eucryphia moorei*, *Ceratopetalum apetalum* (at Bundanoon) and creek banks e.g. with *Tristaniopsis laurina*, *Acacia parvopinnula*.

Substrate: Peaty sand, on sandstone, low nutrients, poorly-drained.

Exposure: Full sun.

Conservation

Conservation: Widespread, well conserved species.

Baeckea ramosissima subsp. **ramosissima**

MYRTACEAE

Rosy Baeckea

Life history

Growth form: Prostrate to erect shrub to 60 cm high, often rooting at nodes. Plants intermediate between subspecies *ramosissima* and *prostrata* occur from Sydney to Jervis Bay.

Vegetative spread: By layering stems.

Longevity:

Primary juvenile period: Seedlings flowered within 2.75 yrs (P. Kubiak pers. comm.).

Flowers: White to deep pink-purple, July–October, peak September.

Fruit/seed: Capsule 3–4.5 mm diam., with 3–4 kidney-shaped seeds, mature October.

Dispersal, establishment & growth: Diaspore: seed, ant-adapted food body for dispersal (Westoby et al. 1990).

Fire response: Killed, recruitment from soil-stored seedbank (Myerscough et al. 1995). Probably killed after high intensity fire at Lane Cove (1/94) (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Vic., Tas., S.A.

Distribution Sydney area: Mainly Coast.

Select locations: CC: South Maroota, Berowra, Cheltenham, Lane Cove, River Park, Coogee, Randwick, Sutherland, Helensburgh, Linden.

Habitat

Habitat: Ridgetops.

Altitude: 0–500 m

Annual rainfall: 800–1400 mm

Typical local abundance: Frequent to occasional.

Vegetation: Scrub e.g. with *Corymbia gummifera*, *Leptospermum trinervium*, *Hakea teretifolia*, *H. dactyloides*, *Banksia ericifolia*; open-forest e.g. with *Eucalyptus haemastoma*, *Allocasuarina littoralis*, *Lasiopetalum ferrugineum* (at Lane Cove River).

Substrate: Sandy loam over sandstone, sometimes with ironstone gravels, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Conservation status not known.

Baeckea utilis**MYRTACEAE**

Mountain Baeckea

Life history

Growth form: Slender shrub to 3 m high, with leaves 4–9 mm long. Bark grey, scaly, persistent (Bean 1997b).

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, December–March, peak December. Insect-pollinated (Webb 1986b).

Fruit/seed: Capsule 2–2.5 mm diam., February–May.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST SWS; Vic.

Distribution Sydney area: Higher parts of Tablelands.

Select locations: CT: Dunns Swamp (Rylstone), Sunny Corner, Murrays Swamp (Newnes Plateau), Jenolan SF, Belah Swamp (Kanangra Boyd), Bindook Swamp, Wingecarribee Swamp, Wingello.

Habitat

Habitat: Wet places.

Altitude: 900–1200 m

Annual rainfall: 900–1100 mm

Typical local abundance: Frequent–occasional.

Vegetation: Shrubswamp e.g. with *Leptospermum myrtifolium*, *L. continentale*, *Grevillea acanthifolia*, *Restio australis*, *Empodisma minus*; shrubby peatland e.g. with *Acacia melanoxylon*, *Epacris paludosa*, *Eucalyptus ovata* (at Wingecarribee) with *Eucalyptus camphora* (at Rylstone).

Substrate: Peaty sand over sandstone, granite, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Conservation status unknown, possibly threatened at Wingecarribee. Last recorded at Wingello in 1899.

Callistemon citrinus

MYRTACEAE

Crimson Bottlebrush

Life history**Growth form:** Erect shrub 1-2 m high**Vegetative spread:** No.**Longevity:** More than 60 years (D. Keith pers. comm.).**Primary juvenile period:** About 5 years.**Flowers:** Spikes bright red, sometimes purplish red or lilac, at any time but peak October–December.**Fruit/seed:** Woody capsule 4–7 mm long with tiny seed (350–700 seed in each fruit (Prakash 1969b), usually persisting on the stem for several years as above ground seedbank. Seeds shed periodically or at death of branch e.g. after fire.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally. Germination at room temperature 20%, more than 35% after exposure to 200°C, with a decline after exposure to higher temperatures; protection of seeds from heat by clustering of fruit lowers germination rate; some dormancy in unheated seeds allows germination between fires (Whelan & Brown 1998).**Fire response:** Resprouts from subterranean buds at Agnes Banks (Benson 1981), at Myall Lakes (Myerscough et al. 1995); secondary juvenile period less than 2 yrs after high intensity fire (1/1994) at Lane Cove and Narrabeen Lake (P. Kubiak pers. comm.).**Interaction with other organisms:** Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Honeybee *Apis mellifera* feeds on nectar (P. Kubiak pers. comm.).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC CT ST NWS CWS; Qld, Vic.**Distribution Sydney area:** Widespread.**Select locations:** CC: Somersby, Hornsby, Pennant Hills, Mosman, Centennial Park, La Perouse, Waterfall, (Stanwell Tops, A.B). CT: Kandos Weir, Katoomba, Mt Tomah, Mittagong, Bundanoon.**Habitat****Habitat:** Creekbanks and shrubswamps.**Altitude:** 0–1000 m **Annual rainfall:** 900–1400 mm**Typical local abundance:** Frequent.**Vegetation:** Wet heath e.g. with *Hakea teretifolia*, *Viminaria juncea*; and along creeks e.g. with *Acacia longifolia*, *Leptospermum polygalifolium*.**Substrate:** Peaty sand over sandstone, low nutrients.**Exposure:** Full sun.**Conservation****Conservation:** Widespread and probably adequately conserved.**Callistemon linearifolius**

MYRTACEAE

Life history**Growth form:** Shrub 3–4 m high**Vegetative spread:** No.**Longevity:** 30 years.**Primary juvenile period:****Flowers:** Red, October–November.**Fruit/seed:** Woody capsule 5-8 mm diam., usually remaining on the stem several years.**Dispersal, establishment & growth:****Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Coast and adjacent plateaus mainly from Georges R. to Hawkesbury R.**Select locations:** CC: Broken Back Range, Lion Is, Brooklyn, Commodore Heights, Lane Cove, Granville, East Hills, Macquarie Fields.

Habitat: Altitude: 0–200 m Annual rainfall: 900–1200 mm Typical local abundance: Occasional. Vegetation: Open-forest e.g. with <i>Corymbia eximia</i> , <i>Eucalyptus punctata</i> , <i>E. umbra</i> , <i>Allocasuarina littoralis</i> , <i>Angophora costata</i> . Substrate: Sandy to clayey soils on sandstone. Exposure:	Habitat
Conservation: Vulnerable local endemic species, reported from KCNP but not well conserved in Georges River and Duck River.	Conservation

Callistemon linearis

MYRTACEAE

Narrow-leaved Bottlebrush

Life history

Growth form: Stiff shrub to 3 m high. Vegetative spread: No. Longevity: Primary juvenile period: Flowers: Pale red, October–November. Fruit/seed: Capsule 7 mm diam. with very small seeds, retained for more than a year. Dispersal, establishment & growth: Fire response: Resprouted at Agnes Banks (Benson 1981), at Lane Cove and Narrabeen Lake after high intensity fire (1/1994), secondary juvenile period about 2.75 yrs (P. Kubiak pers. comm.). Interaction with other organisms: Eastern Spinebill <i>Acanthorhynchus tenuirostris</i> observed probing flower spikes for ?nectar (P. Kubiak pers. comm.).	Life history
Status/origin: Native. Botanical subregions: NC CC SC NT CT NWS CWS NWP; Qld. Distribution Sydney area: Widespread. Select locations: CC: Gwandalan, Bucketty, Killcare, Hornsby, Frenchs Forest, Mosman, Vaucluse, Rookwood, Milperra, La Perouse, Audley, Agnes Banks, Bulli, Glenbrook, Kedumba Valley. CT: Kandos Weir, Capertee, Newnes SF, Blackheath.	Distribution

Habitat: Periodically wet sites. Altitude: 0–1100 m Annual rainfall: 700–1600 mm Typical local abundance: Frequent–occasional. Vegetation: Woodland and open-forest e.g. with <i>Angophora bakeri</i> , <i>Eucalyptus sclerophylla</i> , <i>E. fibrosa</i> , <i>Melaleuca decora</i> , <i>Eucalyptus eximia</i> , <i>Allocasuarina littoralis</i> ; coastal grassland e.g. with <i>Themeda australis</i> , <i>Casuarina glauca</i> ; wet scrub and heath e.g. with <i>Banksia ericifolia</i> , <i>Kunzea ambigua</i> , <i>Allocasuarina distyla</i> , <i>Melaleuca nodosa</i> , <i>M. erubescens</i> . (Drier positions than <i>Callistemon lanceolatus</i> .) Substrate: Sandy to clayey soils on sandstone, Tertiary alluvium, Wianamatta Shale, low nutrients, periodically waterlogged. Exposure:	Habitat
Conservation: Conservation status unknown.	Conservation

Callistemon pallidus

MYRTACEAE

Lemon Bottlebrush

Life history**Growth form:** Erect shrub to 8 m high, bark persistent, new growth silvery.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Cream to yellow spikes, November.**Fruit/seed:** Woody capsule 4–6 mm, with very small seed.**Dispersal, establishment & growth:****Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC SC NT CT ST CWS SWS; Qld, Vic., Tas.**Distribution Sydney area:** Mainly Tablelands.**Select locations:** CT: Winburndale, Sunny Corner, Kanangra, Yerranderie, Medway.**Habitat****Habitat:** Beside streams and in wet rocky places.**Altitude:** 700–1200 m **Annual rainfall:** 900–1000 mm**Typical local abundance:** Rare.**Vegetation:** Eucalypt woodland.**Substrate:** Moist soils, near waterfalls.**Exposure:****Conservation****Conservation:** Uncommon, conservation status unknown.***Callistemon pinifolius***

MYRTACEAE

Pine-leaved Bottlebrush

Life history**Growth form:** Decumbent shrub to 1 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Yellowish green spike, sometimes red, October–November.**Fruit/seed:** Woody capsule 6–7 mm diam., usually persisting on stem for up to 3 years as above ground seedbank. Seeds very small, shed at death of branch e.g. after fire.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally, no dormancy mechanism, germinates without special treatment.**Fire response:** Resprouts (at Agnes Banks, Benson 1981).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC NWS CWS.**Distribution Sydney area:** Mainly western Sydney.**Select locations:** Windsor, Berkshire Park, South Turrumurra (1950s L.McD.), Casula, Villawood, Greenacre, Randwick (1899), Long Bay (1912), Picton (1893).**Habitat****Habitat:** Damp places.**Altitude:** 0–200 m **Annual rainfall:** 800–1200 mm**Typical local abundance:** Occasional.**Vegetation:** Woodland e.g. with *Eucalyptus sclerophylla*, *Melaleuca decora*, *Angophora bakeri*, *Eucalyptus fibrosa*, *E. parramattensis*, *Melaleuca nodosa*.**Substrate:** Clay soils on Tertiary alluvium or poorly drained shale, low nutrients.**Exposure:** Full sun.**Conservation****Conservation:** Conservation status unknown, reported from Randwick by Hall (1996).

Callistemon pityoides

MYRTACEAE

Alpine Bottlebrush

Life history**Growth form:** Shrub to 3 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Golden yellow or cream spikes, sometimes tinged with green or pink, October–December.**Fruit/seed:** Woody capsule 3–5 mm diam., usually persisting on stem as above ground seedbank for several years. Seeds very small, shed periodically or at death of branch e.g. after fire.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally, no dormancy, germinates without special treatment. Seed viability 10%; may have some innate dormancy (Williams & Clarke 1997).**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** SC NT CT ST NWS; Qld, Vic.**Distribution Sydney area:** Upper Blue Mountains.**Select locations:** CT: Newnes Plateau, Clarence, Dingo Swamp, Jensens Swamp (Boyd Plateau).**Habitat****Habitat:** Boggy areas.**Altitude:** 900–1200 m**Annual rainfall:** 900–1100 mm**Typical local abundance:** Frequent.**Vegetation:** Shrub swamp e.g. with *Leptospermum grandifolium*, *Grevillea acanthifolia*, *Restio australis*, *Empodisma minus*.**Substrate:** Peaty sand over sandstone, granite, low nutrients, permanent moisture.**Exposure:** Full sun.**Conservation****Conservation:** Conservation status unknown.

Callistemon rigidus

MYRTACEAE

Stiff Bottlebrush

Life history**Growth form:** Stiff erect shrub mostly 2–3 m high.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** Red, October–November.**Fruit/seed:** Woody capsule 7 mm diam., with small seed, persistent on the stem for several years.**Dispersal, establishment & growth:** Diaspore: seed, water and wind-dispersed (Carr et al. 1992).**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT NWS.**Distribution Sydney area:** Mainly coast.**Select locations:** CC: Putty, McMasters Beach, Bilgola, North Rocks, Lane Cove, Condell Park, Fairfield, Centennial Park (1858), La Perouse.**Habitat****Habitat:** Damp places.**Altitude:** 0–300 m **Annual rainfall:** 1000–1200 mm**Typical local abundance:** Occasional.**Vegetation:** Scrub e.g. with *Melaleuca decora*, *Melaleuca nodosa*, *Epacris purpurascens*, *Callistemon linearis*, *Callistemon pinifolius*.**Substrate:** Clay soils on shales, creek bed on sandstone, periodically wet.**Exposure:** Full sun.**Conservation****Conservation:** Vulnerable in Western Sydney (Benson & McDougall 1991).

Conservation status not known. Chiefly in the Sydney district (Harden 1991).

Callistemon salignus

MYRTACEAE

Willow Bottlebrush

Life history**Growth form:** Large shrub to small tree 3–10 m high with peeling papery bark.

Soft pink new leaves.

Vegetative spread: No.**Longevity:** 50 years.**Primary juvenile period:****Flowers:** Cream–yellowish-white, September–October.**Fruit/seed:** Woody capsule, 4–5 mm diam., with very small seeds, remains on stem for several years.**Dispersal, establishment & growth:** Diaspore: seed, establishes in rocky crevices and open ground during wet periods (Howell et al. 1995).**Fire response:****Interaction with other organisms:** Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT CWS; Qld.**Distribution Sydney area:** Coast and Hawkesbury River.**Select locations:** CC: Gosford, Bayview, Hornsby, Lane Cove River, Hurstville, Belmore, Erskine Creek, Menangle, Mt Kembla, Albion Park, Kangaroo River, Cambewarra.

Habitat

Habitat: Low-lying river flats, damp places, creek banks, levee banks.

Altitude: 0–200 m **Annual rainfall:** above 700 mm

Typical local abundance: Rare-occasional.

Vegetation: Riverbank forest e.g. with *Casuarina cunninghamiana*, *Tristaniopsis laurina*; swamp forest on floodplain e.g. with *Melaleuca styphelioides*, *Casuarina glauca*, or open-forest e.g. with *Eucalyptus tereticornis*, *E. longifolia*, *E. eugenioides*, *Melaleuca decora* (at Yallah) (M. Robinson pers. comm.).

Substrate: Deep sandy loam from alluvium, medium nutrients. On Quaternary alluvium, Coal Measures, Budgong Sandstone, Bumbo Latite in Illawarra (M. Robinson pers. comm.).

Exposure: Light shade–full sun.

Conservation

Conservation: Widespread but not common, much of creekside habitat has been cleared or degraded by exotic weeds.

Callistemon shiressii**MYRTACEAE****Life history**

Growth form: Shrub or small tree 1.5–12 m high.

Vegetative spread:

Longevity: 50–80 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: White to pale cream spikes 3–5 cm long, September–October.

Fruit/seed: Woody capsule 5 mm diam., soon shed (Harden 1991).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally, no dormancy, no soil-stored seedbank. Germination 1–3 weeks (A. Bofeldt pers. comm.).

Fire response: Resprouts (Bell pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC.

Distribution Sydney area: Colo R. to Gosford district, also Howes Valley to Bulga.

Select locations: CC: Ourimbah Creek, Narara, Matcham, Gosford, Colo River, Gees Lagoon.

Habitat

Habitat: Steep hillsides, gullies, occasionally riverbanks. Swampy alluvial flats (A. Bofeldt pers. comm.).

Altitude: 0–200 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Occasional.

Vegetation: Moist eucalypt forest e.g. with *Eucalyptus saligna*, *E. deanei*, *Syncarpia glomulifera*, *Eucalyptus pilularis*, *E. acmenoides*; riparian forest e.g. with *Casuarina cunninghamiana*, *Backhousia myrtifolia*, *Angophora bakeri*; rainforest gullies

Substrate: Clay or sandy loams on shale, alluvium, medium nutrients.

Exposure:

Conservation

Conservation: Coded 3RC- on national rare species list (Briggs & Leigh 1996).

Reported from Yengo NP, Wollemi NP. Observed at Blue Gum Creek, Kenthurst (A. Bofeldt pers. comm.), this appears to be the southern geographical limit.

Callistemon sieberi

MYRTACEAE

River Bottlebrush

Life history**Growth form:** Shrub or small tree.**Vegetative spread:** No.**Longevity:** Medium.**Primary juvenile period:****Flowers:** Cream or pale yellow, rarely pink spikes 3–5 cm long, November–January.**Fruit/seed:** Woody capsule 4–5 mm diam., with numerous fine seeds; capsule remains on stem for several years.**Dispersal, establishment & growth:** Diaspore: seed, germinates without treatment. No soil-stored seedbank. Probably needs open conditions for establishment.**Fire response:** Probably resprouts.**Interaction with other organisms:** Seed eaten by Crimson Rosella *Platyercus elegans* (Lepschi 1993).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT CT ST NWS CWS SWS NWP; Qld, Vic., ?Tas., S.A.**Distribution Sydney area:** Mainly Wollondilly–Coxs River, also Belubula River.**Select locations:** Warragamba R., Nepean River Gorge, Coxs River, Kowmung R., Wollondilly R., Wombeyan Caves, Abercrombie, Tolwong, Junction Reefs.**Habitat****Habitat:** Riverbanks, watercourses, rocky riverbeds.**Altitude:** 0–800 m **Annual rainfall:** 600–1000 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Riparian scrub e.g. with *Casuarina cunninghamiana*, *Tristaniopsis laurina*, *Callistemon salignus* (Wollondilly R.), or *Eucalyptus camaldulensis*, *E. bridgesiana* (Belubula R.).**Substrate:** Sand and alluvial deposits, granite, sandstone boulders or metamorphics.

Low–medium nutrients.

Exposure: Full sun to light shade.**Conservation****Conservation:** Riparian vegetation habitat of *Callistemon sieberi* is often overgrazed and weedy so populations of *Callistemon sieberi* are probably decreasing due to lack of regeneration.***Callistemon subulatus***

MYRTACEAE

Life history**Growth form:** Low spreading shrub mostly 1 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Dark crimson spikes 4–8 cm long, mainly summer & sporadically at any time.**Fruit/seed:** Woody capsule 4–5 mm, usually persisting on stem as above ground seedbank for several years. Seeds very small, shed periodically or at death of branch e.g. after fire.**Dispersal, establishment & growth:****Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST; Vic.**Distribution Sydney area:** Woronora River.**Select locations:** Woronora River.**Habitat****Habitat:** Rocky creeks.**Altitude:** 0–200 m **Annual rainfall:** 1400 mm**Typical local abundance:** Occasional.**Vegetation:** Riparian scrub e.g. with *Tristaniopsis laurina*, *Tristaniopsis neriifolia*, *Hakea salicifolia*.**Substrate:** Sandstone boulders and sandy alluvium, low nutrients.**Exposure:**

Conservation

Conservation: Woronora River appears to be northern geographical limit of distribution, conservation status unknown but appears to occur in Heathcote NP.

Calytrix tetragona**MYRTACEAE****Life history**

Growth form: Shrub to 0.5–2 m high, a variable species with considerable diversity in flower, leaf and habit (Harden 1991).

Vegetative spread: No.

Longevity:

Primary juvenile period: Seedlings flowering 3.75 yrs after fire (P. Kubiak pers. comm.).

Flowers: White to pink, July–December. Visited by honeybees, native bees, flies and beetles and small wasps, ?possible pollinators (P. Kubiak pers. comm.). Robinson (1991) suggested that the long awns may detour ants away from nectar.

Fruit/seed: Dry indehiscent fruit enclosed in red to purple cup-like structure, with spear-like attachment to penetrate substrate, shed at maturity October–December. Seed 2.75–3 mm long (Craven 1987).

Dispersal, establishment & growth: Diaspore: fruit, wind-dispersed locally (Westoby et al. 1990), or gravity-dispersed. Soil-stored seedbank (Fox 1988).

Fire response: Resprouts in Wollemi NP (Bell pers. comm.), at Broadwater NP (Benwell 1998), at Myall Lakes (Myerscough et al. 1995). Killed after high intensity fire (1/1994) at Lane Cove and Narrabeen Lake (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT ST NWS CWS SWS NWP SWP; Qld, Vic., Tas., S.A., W.A.

Distribution Sydney area: Widespread

Select locations: CC: Colo, Kenthurst, Berowra, La Perouse, Waterfall, Kentlyn, Nortons Basin. CT: Rylstone, Clarence, Blackheath, Hill End, Yerranderie, Abercrombie Caves, Berrima, Penrose, Mt Canobolas.

Habitat

Habitat: Heath on ridges.

Altitude: 0–1200 m

Annual rainfall: 800–1600 mm

Typical local abundance: Frequent–occasional.

Vegetation: Cliff heath e.g. with *Melaleuca armillaris*; coastal heath e.g. with *Angophora hispida*, *Eucalyptus camfieldii*, *Banksia oblongifolia*; montane heath e.g. with *Allocasuarina nana*, *Banksia ericifolia*; woodland and eucalypt open-forest e.g. with *Corymbia eximia*, *Eucalyptus punctata*, *E. sparsifolia*, *E. beyeriana*, *Oxylobium ilicifolium*, *Leucopogon muticus*.

Substrate: Skeletal, sandy soils over sandstone, low nutrients, well-drained.

Exposure: Full sun.

Conservation

Conservation: Probably adequately conserved.

Choricarpia leptopetala

MYRTACEAE

Brown Myrtle, Brush Turpentine

Life history

Growth form: Shrub or tree to 15 m high, with flaky bark; leaves opposite, with conspicuous oil glands.

Vegetative spread: Suckers extensively forming spreading thickets (A. Bofeldt pers. comm.).

Longevity: 25–100 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: Cream, September–November.

Fruit/seed: Thin walled, indehiscent, fruits 2 mm long in crowded heads. Fruit remain on plants for several months (Elliot & Jones 1984). Seed remains viable in storage for at least 2 years (A. Bofeldt pers. comm.).

Dispersal, establishment & growth: Water-dispersed, 5–20% germination in 6–10 weeks (A. Bofeldt pers. comm.).

Fire response: Resprouts from rootstock (A. Bofeldt pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld.

Distribution Sydney area: North from Stanwell Park.

Select locations: CC: Morisset, Wyong, Ourimbah, Putty, Wheeny Creek, Kurrajong, Stanwell Park.

Habitat

Habitat: Creekbanks, watercourses, ridges.

Altitude: 0–500 m **Annual rainfall:** 1000–1600 mm

Typical local abundance: Frequent.

Vegetation: Moist eucalypt forest e.g. with *Eucalyptus botryoides*, *E. deanei*, *E. saligna*; rainforest and margins e.g. with *Acmena smithii*, *Backhousia myrtifolia*, *Euodia micrococca*, *Tristaniopsis laurina*, *Endiandra sieberi*. Monospecific stands in dry rainforest and in gallery rainforest at Ourimbah (A. Bofeldt pers. comm.).

Substrate: Sandy clay loam or alluvium, shale, medium nutrients. Soil from Narrabeen series, well-drained (A. Bofeldt pers. comm.).

Exposure: Sunny sites but shade-tolerant (A. Bofeldt pers. comm.).

Conservation

Conservation: Stanwell Park where the single population is not conserved (A. Bofeldt pers. comm.) is southern geographical limit, conservation status elsewhere unknown but likely to be vulnerable.

***Corymbia citriodora* * (*Eucalyptus citriodora*)**

MYRTACEAE

Lemon-scented Gum

Life history

Growth form: Tree to 40 m high, with smooth white to pale grey, pink or cream bark (Hill & Johnson 1995).

Vegetative spread: No.

Longevity: Probably 50 years.

Primary juvenile period:

Flowers: White, January–June (Hill & Johnson 1995).

Fruit/seed: Woody capsule 8–15 mm long, 7–11 mm diam., seeds red-brown 2–3 mm long (Hill & Johnson 1995). Seeds shed annually (Elliot & Jones 1986).

Dispersal, establishment & growth: Diaspore: seed, locally dispersed by gravity. Seedling recruitment in open areas, near parent tree in absence of fire, quick-growing.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Exotic in CC, native to Queensland. Planted as an ornamental in parks and gardens in the Sydney region.

Botanical subregions: *CC; Qld.

Distribution Sydney area: Sydney suburban area.

Select locations: CC: Beecroft, Lane Cove, Yagoona, Rookwood.

Habitat

Habitat:

Altitude: 0–200 m

Annual rainfall: 900–1400 mm

Typical local abundance:

Vegetation:

Substrate: Clay soils on shale, medium nutrients.

Exposure: Full sun to light shade.

Conservation

Conservation: One of the few eucalypts to naturalise locally from planted individuals.

Corymbia eximia* (*Eucalyptus eximia*)*MYRTACEAE**

Yellow Bloodwood

Life history

Growth form: Tree to 20 m high, with yellowish flaky bark. Stunted and multi-stemmed on some exposed sites.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White to cream, buds develop February to August, flowering August to October.

Fruit/seed: Woody urn-shaped capsule, 14–21 mm long, 9–15 mm diam., seed, red-brown, 2–3 mm long (Hill & Johnson 1995), mature December, retained on tree for up to 16 mths with gradual shedding resulting from breaking off by wind, cockatoos etc., as well as natural shedding.

Dispersal, establishment & growth: Diaspore: seed, shed sporadically over the year, gravity-dispersed locally up to 30 m?

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995).

Distribution

Status/origin: Native.

Botanical subregions: CC SC.

Distribution Sydney area: Widespread.

Select locations: CC: Putty, MacDonald River valley, St Albans, Wisemans Ferry, East Kurrajong, Cowan, Springwood, Mangrove Mountain, Bents Basin, Picton Lakes, Tallowa Dam.

Habitat

Habitat: Ridges and hillsides.

Altitude: 0–500 m

Annual rainfall: 900–1200 mm

Typical local abundance: Frequent.

Vegetation: Dry sclerophyll woodland e.g. with *Corymbia gummifera*, *Angophora hispida*, *Eucalyptus sparsifolia*, *E. punctata*, *Allocasuarina littoralis*.

Substrate: Sandy soil over sandstone, low nutrients, well-drained.

Exposure: Full sun, exposed, often western aspect.

Conservation

Conservation: Probably adequately conserved e.g. Yengo NP, Wollemi NP, and Muogamarra NR.

Corymbia gummifera (*Eucalyptus gummifera*)

MYRTACEAE

Red Bloodwood

Life history

Growth form: Small tree to tree generally 10–20 m high, sometimes reduced to mallee.

Corymbia gummifera 'always carries a very heavy top in this district [Hornsby] and withstands gales much better than *E. pilularis*' [Herb. specimen 1917 W.F. Blakely].

Vegetative spread: Lignotuber of mallee observed covering 75 m², with 301 stems; lignotubers may be absent in mature trees (Mullette 1978).

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Creamy white, buds develop March, flowering April. Pollination probably by honeybees native bees, flies, wasps, butterflies and moths (P. Kubiak pers. comm.), gliders (House 1997).

Fruit/seed: Woody urn-shaped capsule; 11–15 mm diam., seed 5–6 mm long (Hill & Johnson 1995), seeds without the terminal wing that is usual in red bloodwoods (Ladiges 1997). Mature October, gradually shed from tree over 7 month period until about May.

Dispersal, establishment & growth: Diaspore: seed, no special dispersal morphology (Westoby et al. 1990), gravity-dispersed locally up to ?30 m.

Fire response: Resprouts from epicormic buds or lignotuber. Secondary juvenile period 3 yrs, after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). New Holland and White-cheeked Honeyeaters obtain nectar from flowers (Armstrong 1991). Yellow-bellied Glider *Petaurus australis* feeds on sap (Goldingay 1991). Probably an important source of nectar for insects during late summer (P. Kubiak pers. comm.). Tiny miner fly *Agromyza* sp. (Agromyzidae) attacks midrib of leaves aborting young foliage (Froggatt 1907). Larvae of moth *Thysarcha ecclesiastis* bore into the stems (Common 1990). Larvae of Longicorn Beetle *Scolecobrotus westwoodi* feed on stems (Hawkeswood 1992a). Can gain P from Fe and Al phosphates with and without mycorrhizal associations (Kirkpatrick 1997). Wood resistant to termite attack (Froggatt 1923).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT; Qld, Vic.

Distribution Sydney area: Coast and Blue Mountains.

Select locations: CC: Olney SF, Wyee, Gosford, Bilpin, Killcare, Avalon, Berowra, Hornsby, Faulconbridge, Bents Basin, Manly, Northbridge, Flemington, Abbotsford, Como, Kurnell, Oakdale, Heathcote. CT: Thirlmere, Hill Top, Tallowa Dam, Cambewarra. CT: Mt Irvine, Lawson, Narrow Neck, Kings Tableland, above Jamberoo Pass, Barbers Creek.

Habitat

Habitat: Ridges and upper slopes.

Altitude: 0–800 m

Annual rainfall: 1000–1600 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt open-forest or woodland e.g. with *Angophora costata*, *Eucalyptus piperita*, *E. agglomerata*, *E. sieberi*, *E. eximia*, *E. punctata*, *E. squamosa* with shrubby understorey.

Substrate: Sand and sandy soil over sandstone, low nutrients. Stomatal control of water loss is independent of soil moisture regime (Bell & Williams 1997).

Exposure: Full sun to light shade.

Conservation

Conservation: A widespread species probably adequately conserved e.g. in Ku-ring-gai Chase NP, Royal NP, Blue Mountains NP.

Corymbia maculata (*Eucalyptus maculata*)

MYRTACEAE

Spotted Gum

Life history

Growth form: Tree generally 20–30 m high with smooth bark falling off in patches giving the trunk a spotted appearance. Aboriginal name *Booangi* (Cumberland and Camden) (Maiden & Campbell 1897).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Buds develop February, white/cream flowers March–April. Flowers in 2–3 year cycles, not evidently related to wet or dry season, 30% of trees flowering at Appin in May 1992 (Alan Leishmann pers. comm.). May flower and set seed infrequently, after the summer growth period; pollinated by fruit bats, gliders (House 1997).

Fruit/seed: Woody urn-shaped capsule, 11–15 mm long, seeds red-brown 2–3 mm long (Hill & Johnson 1995). Mature May through April (11 mths), probably shed sporadically.

Dispersal, establishment & growth: Diaspore: seed, gravity-dispersed locally up to ?30 m. Shoot growth peaks in autumn and spring (House 1997). Reduction in overstorey competition, by e.g. treefall, is associated with release of previously suppressed lignotuberous growth (Bell & Williams 1997).

Fire response: Resprouts from epicormic buds and lignotubers.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Host to *Ogmograptis scribula* Scribble Moth (Jones & Elliot 1986), Cerambycid longicorn beetles *Adrium artifex*, *Phacodes obscurus*, *Tricheops ephippiger* (Hawkeswood 1993), *Cnemoplites cephalotes* (Hawkeswood 1992b). Sapwood of dried timber damaged by brown beetles *Lyctus brunneus*, *L. costatus*; larvae of longicorn beetles *Phoracantha semipunctata*, *P. tricuspis*, *Rhagiomorpha concolor* live between bark and in dead wood; wash-leather fungus *Xylostroma giganteum* found in the timber (Maiden & Campbell 1897). Resistant to fungus *Ptytopthora cinnamomi* (Halsall 1978).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT CWS; Vic.

Distribution Sydney area: Widespread and localised.

Select locations: CC: Morisset, Wyong, Avalon, Pittwater, Prospect, Liverpool, Werombi, Orangeville, Appin, Corrimal. CT: Wingello, Bomaderry Creek.

Habitat

Habitat: Drier sites, ridges and upper slopes.

Altitude: 0–600 m

Annual rainfall: 800–1200 mm

Typical local abundance: Frequent

Vegetation: Open-forest e.g. with *Eucalyptus paniculata* (Wyong, Pittwater area (Benson & Howell 1994)); *E. moluccana*, *E. tereticornis* (Cumberland Plain Woodland of Benson 1992).

Substrate: Clay soil on shales and slates, medium nutrients, well-drained.

Exposure: Full sun to light shade.

Conservation

Conservation: Conservation status unknown. Occurs in Cumberland Plain Woodland and Pittwater Spotted Gum Forest, both listed as Endangered Ecological Community under the NSW *Threatened Species Conservation Act 1995*.

Darwinia biflora

MYRTACEAE

Life history

Growth form: Erect or spreading shrub to 80 cm high, with flowers usually in pairs.

Vegetative spread: No.

Longevity: Short-lived, probably 5–10 years

Primary juvenile period: 2–3 years. Seedlings flowered 2 yrs after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Flowers: White while open, turning pink in the upper part and closing at maturity. Flowers at any time, peak July–August. Self pollination before flower opening is usual. Flowers are rarely visited by insects and outcrossing is rare (Briggs 1962).

Fruit/seed: Indehiscent 1-seeded fruit 1.2–1.7 mm diam.

Dispersal, establishment & growth: Diaspore: Fruit, difficult to find but may germinate without treatment (B.G. Briggs pers. comm.). Soil-stored seedbank. Found as a coloniser on appropriate disturbed sites. Large numbers of seedlings have been observed in areas observed in areas burnt 2–3 years previously. Gregarious, local population sizes may range from 10–200 000 plants.

Fire response: Killed by fire and re-established from soil-stored seed.

Interaction with other organisms: Hive Bees take honey from the base of the flower without removing pollen or touching the stigma (Brewster & LePlastrier 1927). Leaves apparently not palatable to rabbits (P. Kubiak pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Mainly Maroota to Turramurra.

Select locations: CC: Maroota, Annangrove, Mt Colah, Hornsby, Pennant Hills, North Wahroonga, Hunters Hill (1892), Waterfall (1933).

Habitat

Habitat: Ridges.

Altitude: 0–200 m

Annual rainfall: 800–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Eucalypt woodland e.g. with *Eucalyptus haemastoma*, *Corymbia gummifera*, *Eucalyptus piperita*, *E. globoides*, *Angophora costata*; scrub or heath e.g. with *Angophora hispida*, *Calytrix tetragona*, *Phyllota phyllicoides*, *Banksia marginatga*, *Banksia ericifolia*.

Substrate: Shallow yellow skeletal sands, usually on ridgetops with a shallow layer of shale or ironstone gravel overlying sandstone or shale/sandstone transition. Low–medium nutrient soils.

Exposure: Full sun to light shade.

Conservation

Conservation: Restricted local endemic, listed as Vulnerable (schedule II) under

NSW *Threatened Species Conservation Act 1995*. Coded 2VCa on national rare species list (Briggs & Leigh 1996) Most populations have now been reduced in size by adjacent development so that plants are vulnerable. There are no recent collections from Hunters Hill or Waterfall.

Darwinia camptostylis

MYRTACEAE

Life history

Growth form: Erect or spreading shrub to 30 cm high.

Vegetative spread:

Longevity: Probably short-lived 5–10 years.

Primary juvenile period:

Flowers: White while open, turning pink in the upper part and closing at maturity, August–September. Self pollination before flower opening is usual; flowers are rarely visited by insects and outcrossing is rare (Briggs 1962).

Fruit/seed: Indehiscent 1-seeded fruit 1.5–2 mm diam.

Dispersal, establishment & growth:

Fire response: Probably killed.

Interaction with other organisms: Hive Bees take honey from the base of the flower without removing pollen or touching the stigma (Brewster & LePlastrier 1927).

Distribution

Status/origin: Native.

Botanical subregions: CC CT SC; Vic.

Distribution Sydney area: Mainly Kiama–Nowra area.

Select locations: CC: Little River (Buxton), Minnamurra, Berry. CT: Mt Carrialoo (Barrengarry).

Habitat

Habitat: Ridges, rocky riverbeds.

Altitude: 0–700 m **Annual rainfall:** 1000–1600 mm

Typical local abundance:

Vegetation: Heath

Substrate: Sandy soils from sandstone, or rocky part of riverbed (Little River).

Exposure:

Conservation

Conservation: Relatively restricted species confined mainly to Nowra area. An isolated occurrence at Buxton is the northern geographical limit. Conservation status unknown.

Darwinia diminuta**MYRTACEAE****Life history**

Growth form: Erect or spreading shrub to 1.5 m high.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White while open, turning pink in the upper part and closing at maturity, September–December, April. Self pollination before flower opening is usual. Flowers are rarely visited by insects and outcrossing is rare (Briggs 1962).

Fruit/seed: Indehiscent 1-seeded fruit 1.3–1.7 mm diam.

Dispersal, establishment & growth: Diaspore: fruit. Seed dormancy only likely to be broken by fires that cause significant heating of soil with 20% seed unaffected (Auld et al. 1991).

Fire response: Probably killed.

Interaction with other organisms: Hive Bees take honey from the base of the flower without removing pollen or touching the stigma (Brewster & LePlastrier 1927).

Distribution

Status/origin: Native.

Botanical subregions: CC CT.

Distribution Sydney area: Ingleside–Manly, Loftus–O'Hares Creek (Keith 1994).

Select locations: CC: Terrey Hills, Tumbledown Dick, Forestville, Manly (1961), Sutherland, Loftus, Anise Falls, Helensburgh, O'Hares Creek. CT: Barren Grounds NR.

Habitat

Habitat: Ridgetops (Keith 1994).

Altitude: 0–600 m **Annual rainfall:** 1200–1800 mm

Typical local abundance: Frequent–occasional.

Vegetation: Heath e.g. with *Banksia ericifolia*, *B. oblongifolia*, *B. robur*, *Bauera rubioides*; mallee heath e.g. *Eucalyptus luehmanniana*, *Corymbia gummifera* (mallee form) (Keith 1994).

Substrate: Poorly-drained sandy soil, stony sandstone ridgetops with shallow, well-drained sandy loams (Keith 1994).

Exposure: Full sun to light shade.

Conservation

Conservation: Rare local endemic, coded 3RCi on national rare species list (Briggs & Leigh 1996). No populations in Terrey Hills–Manly area conserved.

Darwinia fascicularis* subsp. *fascicularis

MYRTACEAE

Life history**Growth form:** Erect or rarely decumbent shrub.**Vegetative spread:** No.**Longevity:** 25–60 years (Keith 1995).**Primary juvenile period:** Seedlings flowering within 3 yrs (P. Kubiak pers. comm.).**Flowers:** White while open, turning pink in the upper part and closing at maturity, with pollen and stigma still exposed. Flowers do not mature en masse but in succession. Flowers at anytime, peak July–October, minor peak April–May. Number of flowers per cluster increases from northern population (6) to southern population (14) with discontinuity at Hawkesbury River (Briggs 1962).**Fruit/seed:** Indehiscent 1-seeded fruit 1–1.5 mm diam.**Dispersal, establishment & growth:** No special morphology for dispersal (Westoby et al. 1990). Recruitment mainly after fire.**Fire response:** Stems killed and re-establishes from basal sprouts (D.H.B., D. Keith pers. comm.). Killed after high intensity fire (1/1994) at Lane Cove and Narrabeen Lake (P. Kubiak pers. comm.).**Interaction with other organisms:** New Holland Honeyeater, White-cheeked Honeyeater, Eastern Spinebill feed on nectar (Pyke 1981). Honeybees take honey from the base of the flower without removing pollen or touching the stigma (Brewster & LePlastrier 1927). Leaves apparently not palatable to rabbits (P. Kubiak pers. comm.).**Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Gosford to Bulli, within 30 km of the coastline.**Select locations:** CC: Brisbane Water NP, West Head, Dee Why, Cheltenham, Middle Harbour, North Head, Rose Bay, La Perouse, Kurnell, Cronulla, Kentlyn, Woronora River, Coalcliff.**Habitat****Habitat:** Sandstone heath.**Altitude:** 0–300 m**Annual rainfall:** 1200–1600 mm**Typical local abundance:** Frequent.**Vegetation:** Scrub or heath e.g. with *Allocasuarina distyla*, *Leptospermum squarrosomum*, *Epacris microphylla*, *Banksia ericifolia*, *Eriostemon australasius*, *Bossiaea heterophylla*, *Ricinocarpus pinifolius*.**Substrate:** On shallow sandy soil on Hawkesbury sandstone, low nutrients.**Exposure:** Full sun.**Conservation****Conservation:** A local endemic species that is probably adequately conserved, e.g. Brisbane Water NP, Ku-ring-gai NP, Royal NP.***Darwinia fascicularis* subsp. *oligantha***

MYRTACEAE

Life history**Growth form:** Spreading shrub to 60 cm high. Named *fasciculata* for its bunched leaves (Rudge 1815).**Vegetative spread:** Branches may form adventitious roots but these do not appear to form separate plants.**Longevity:** 25–60 years (D. Keith pers. comm.).**Primary juvenile period:****Flowers:** White while open, turning pink in the upper part and closing at maturity. Flowers throughout the year.**Fruit/seed:** Indehiscent 1-seeded fruit 1–1.5 mm diam.**Dispersal, establishment & growth:** Diaspore: seed. No special morphology for dispersal (Westoby et al. 1990).**Fire response:** Stems killed and resprouts from base.**Interaction with other organisms:**

Distribution

Status/origin: Native.

Botanical subregions: CC CT

Distribution Sydney area: Upper Blue Mountains, Maroota.

Select locations: CC: Linden Ridge (Maroota, 1992). CT: Mt Banks, Mt Hay, Kings Tableland, Wentworth Falls, McMahons Lookout, Wanganderry Plateau.

Habitat

Habitat: Ridges with rocky pavements

Altitude: 500–1000 m, 200 m (Maroota) **Annual rainfall:** 800–1400 mm

Typical local abundance: Frequent.

Vegetation: Low heath e.g. with *Allocasuarina nana*, *Allocasuarina distyla*, *Banksia ericifolia*, *Caustis flexuosa*.

Substrate: Shallow soils on sandstone outcrops, low nutrients. Watertable mostly low, moisture supply intermittent, fresh.

Exposure: Exposed sites; full sun to light shade.

Conservation

Conservation: Probably adequately conserved in Upper Blue Mountains. Outlying populations at Maroota threatened by sand extraction.

Darwinia glaucophylla**MYRTACEAE****Life history**

Growth form: Shrub with main stems prostrate and rooting, up to 2.5 m long.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White while open, turning pink in the upper part and closing at maturity September–May. A considerable proportion of outbreedings may occur (Briggs 1962).

Fruit/seed: Indehiscent 1-seeded fruit 1–1.5 mm diam.

Dispersal, establishment & growth: Diaspore: fruit.

Fire response: Probably killed and re-establishes from soil-stored seed.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Calga-Wondabyne.

Select locations: CC: Calga, Somersby Falls, Kariong, Mt Kariong.

Habitat

Habitat: Sandstone hillsides and ridges.

Altitude: 0–300 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Rare–frequent.

Vegetation: In scrub e.g. with *Banksia ericifolia*, *Acacia terminalis*, *Acacia oxycedrus*, *Angophora hispida*, *Hakea teretifolia*, *Bauera rubioides*; and woodland e.g. with *Corymbia gummifera*, *C. eximia*, *Eucalyptus haemastoma*, *E. punctata*.

Substrate: Sandy soil, often rooted at edge of sandstone exposures and extending over bare rock surfaces, low nutrients, poorly-drained.

Exposure: Full sun.

Conservation

Conservation: Local endemic species, coded 2RCi on national rare species list (Briggs & Leigh 1996), partly conserved within Brisbane Water NP.

Darwinia grandiflora

MYRTACEAE

Life history

Growth form: Shrub with main stems prostrate and rooting, to 2.5 m long; branches ascending to 5 cm high. Prostrate habit of this species is unusual in the Myrtaceae and is similar to that of *D. glaucophylla* (Briggs 1962).

Vegetative spread: Roots form along stems (Briggs 1962).

Longevity: Indefinite (D. Keith pers. comm.).

Primary juvenile period:

Flowers: White while open, turning pink in the upper part and closing at maturity, June–March. Some vector is required to transfer the pollen from the stylar hairs to the stigma and a considerable proportion of outbreeding may occur (Briggs 1962).

Fruit/seed: Indehiscent 1-seeded fruit 1.4–2.4 mm diam.

Dispersal, establishment & growth: Diaspore: fruit, no special dispersal morphology (Westoby et al. 1990). Recruitment mainly after fire from soil-stored seedbank (D. Keith pers. comm.).

Fire response: Resprouts after fire from subterranean buds (D Keith).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Woronora Plateau–Waterfall to Bargo.

Select locations: CC: Waterfall, Helensburgh, Darkes Forest, Coalcliff, Cataract River, Avon Dam, Bargo.

Habitat

Habitat: Ridgetops with rocky outcrops.

Altitude: 0–400 m

Annual rainfall: 1000–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Eucalypt open-forest, and woodland e.g. with *Eucalyptus sieberi*, *E. sclerophylla*, *Corymbia gummifera*, *Eucalyptus piperita*, *E. agglomerata*.

Substrate: Sandy, low nutrient soils, on sandstone rocks and rock pavements. Poorly-drained.

Exposure: Full sun.

Conservation

Conservation: Local endemic coded 2RCi on national rare species list (Briggs & Leigh 1996).

Darwinia leptantha

MYRTACEAE

Life history

Growth form: Erect shrub 20–80 cm high.

Vegetative spread:

Longevity:

Primary juvenile period: 3 years.

Flowers: White while open, turning pink in the upper part and closing at maturity, August–November. Self pollination before flower opening is usual. Flowers are rarely visited by insects and outcrossing is rare (Briggs 1962).

Fruit/seed: Indehiscent 1-seeded fruit 0.5–1 mm diam., probably shed at maturity.

Dispersal, establishment & growth: Diaspore: fruit, gravity dispersed locally, probably has limited soil-stored seedbank. Seedling recruitment following fire.

Fire response: Killed.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC ST.

Distribution Sydney area: Coast and ranges

Select locations: CC: North Head, Centennial Park (1896), Malabar, La Perouse, Cronulla (1919).

Habitat

Habitat: Coastal heath.

Altitude: 0–100 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Rare.

Vegetation: Wet heath e.g. with *Darwinia fascicularis*, *Leptospermum squarrosum*, *Epacris obtusifolia*, *Calytrix tetragona*, *Hypolaena fastigiata*.

Substrate: Moist sandy soil over sandstone, low nutrients, poorly drained.

Exposure:

Conservation

Conservation: Population at North Head is in Sydney Harbour NP, conservation status elsewhere unknown, though eastern suburbs populations (Malabar, La Perouse) now very restricted. No recent records for Cronulla.

Darwinia peduncularis**MYRTACEAE****Life history**

Growth form: Shrub to 1.5 m high

Vegetative spread:

Longevity: ? medium.

Primary juvenile period:

Flowers: White while open, turning pink in the upper part and closing at maturity, with pollen and stigma still exposed; flowers mature successively for pollination by honey-eater birds (Brewster & LePlastrier 1927), May–November.

Fruit/seed: Indehiscent 1-seeded fruit 2–2.5 mm diam., October.

Dispersal, establishment & growth: Diaspore: fruit.

Fire response: Probably killed.

Interaction with other organisms: Hive Bees take honey from the base of the flower without removing pollen or touching the stigma (Brewster & LePlastrier 1927).

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Berowra Creek, also Glen Davis.

Select locations: CC: Layburys Creek (L.McD.), Brooklyn, Berowra, Mt Kuring-gai, Hornsby, Glen Davis. CT: Mt Boonbourwa, Kings Tableland.

Habitat

Habitat: Rocky hillside.

Altitude: 0–1000 m **Annual rainfall:** 600–1200 mm

Typical local abundance: Rare.

Vegetation: Open-forest e.g. with *Angophora costata*, *Banksia serrata*, *Ceratopetalum gummiferum*, *Xanthorrhoea* sp., *Boronia anemonifolius*; or woodland e.g. with *Eucalyptus laophylla*, *E. bensonii*, *E. multicaulis* (at Mt Boonbourwa).

Substrate: Sandy soil over sandstone, low nutrients, well-drained.

Exposure: Light to mid-shade.

Conservation

Conservation: Local endemic species, coded 3RCi on national rare species list (Briggs & Leigh 1996), populations vulnerable to weed invasion of habitat.

Darwinia procera

MYRTACEAE

Life history**Growth form:** Erect shrub 0.8-3 m high.**Vegetative spread:** No.**Longevity:** Probably 30 years.**Primary juvenile period:****Flowers:** White while open, turning pink in the upper part and closing at maturity, May–January, peak August–September. Self pollination before flower opening is usual. Flowers are rarely visited by insects and outcrossing is rare (Briggs 1962).**Fruit/seed:** Indehiscent 1-seeded fruit 5–8 mm long. Appears to mature and drop within 2 months of flowering.**Dispersal, establishment & growth:** Diaspore: fruit, gravity dispersed locally, soil-stored seedbank. Up to 45 seedlings/metre² were recorded in an area burnt 19 months previously (P. Wilson pers. comm.).**Fire response:** Plants killed by fire and regenerate from soil-stored seed (P. Kubiak pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Gosford to Manly**Select locations:** CC: Piles Creek (Kariong), Cowan, Berowra, St Ives, Middle Harbour Creek, Narrabeen, Brookvale.**Habitat****Habitat:** Moist protected creek-beds and narrow gullies.**Altitude:** 0–200 m**Annual rainfall:** 1200–1400 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Woodland e.g. with *Eucalyptus piperita*, *Angophora costata*, *Corymbia gummifera*, *Ceratopetalum gummiferum*, *Bauera rubioides*.**Substrate:** Sandy soil or sandy alluvium from Hawkesbury Sandstone, low nutrients.**Exposure:** Sheltered sites, tolerates semi-shade (Blake 1981).**Conservation****Conservation:** Local endemic coded 2RCa on national rare species list (Briggs & Leigh 1996), adequately conserved. Most populations are now within national parks but now mostly restricted to Ku-ring-gai Chase NP, Deep Creek, and Middle Harbour Creek in Garigal NP (L.McD.).***Darwinia taxifolia* subsp. *macrolaena***

MYRTACEAE

Life history**Growth form:** Erect or decumbent shrub to 1 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Red, July.**Fruit/seed:** Indehiscent 1-seeded fruit 1.2–2.2 mm diam.**Dispersal, establishment & growth:** Diaspore: fruit.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** SC CT ST.**Distribution Sydney area:** Medway.**Select locations:** CT: Medway.

Habitat**Habitat:** Rocky areas.**Altitude:** 600 m**Annual rainfall:** 800 mm**Typical local abundance:****Vegetation:** Heath**Substrate:** Sandstone.**Exposure:****Conservation****Conservation:** Medway (near Berrima) is northern geographical limit and only known location in Sydney Region. Elsewhere Nerriga–Tomerong.***Darwinia taxifolia* subsp. *taxifolia*****MYRTACEAE****Life history****Growth form:** Erect or decumbent shrub to 1 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White while open, turning pink in the upper part and closing at maturity, with pollen and stigma still exposed; flowers mature successively for pollination by honey-eater birds (Brewster & LePlastrier 1927). Flowers October–March, peak December.**Fruit/seed:** Indehiscent 1-seeded fruit 1.2–2.2 mm diam.**Dispersal, establishment & growth:** Diaspore: fruit.**Fire response:** Killed (Bell pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CT.**Distribution Sydney area:** Upper Blue Mountains.**Select locations:** CT: Glen Davis, Newnes Junction, Mt Victoria, Blackheath, Leura (1914).**Habitat****Habitat:** Rocky exposed sites.**Altitude:** 800–1100 m**Annual rainfall:** 1100–1400**Typical local abundance:** Occasional.**Vegetation:** Heath e.g. with *Allocasuarina nana*, *Leptospermum trinervium*, *Kunzea capitata*, *Conospermum taxifolium*, *Eucalyptus stricta*.**Substrate:** Shallow sandy soil over sandstone, well-drained.**Exposure:** Windswept exposed sites.**Conservation****Conservation:** A local endemic taxon, conservation status unknown.

Decaspermum humile

MYRTACEAE

Silky Myrtle

Life history

Growth form: Shrub or tree to 15 m high. Slightly buttressed at the base, bark brown with vertical papery scales (Floyd 1973).

Vegetative spread: Suckering (A. Bofeldt pers. comm.).

Longevity: ?50–100 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: White–pale mauve, March–May (Floyd 1973).

Fruit/seed: Black berry 4–8 mm diam., with 8–10 black hard seeds 3–6 mm diam., July–November (Floyd 1973), retain viability less than 6 months (A. Bofeldt pers. comm.).

Dispersal, establishment & growth: Bird- and water-dispersed, 75–80% germination in 4–8 weeks (A. Bofeldt pers. comm.).

Fire response: Fire-sensitive but probably able to resprout from rootstock (A. Bofeldt pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld, N.G.

Distribution Sydney area: North from Gosford area.

Select locations: CC: Lisarow, Gosford.

Habitat

Habitat: Rainforest.

Altitude: 0–200 m

Annual rainfall: 1200–1400 mm

Typical local abundance: Rare.

Vegetation: Riparian rainforest.

Substrate: Deep loamy soils on alluvium, medium nutrients, well-drained.

Exposure: Sunny sites but shade-tolerant (A. Bofeldt pers. comm.).

Conservation

Conservation: Gosford is southern geographical limit. Rare and not conserved.

Eucalyptus acmenoides

MYRTACEAE

White Mahogany

Life history

Growth form: Tree generally 30 m high, with grey to red-brown, persistent stringy bark.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, October–February. Flowering at the end of the summer growth period (House 1997).

Fruit/seed: Woody capsule 4–8 mm long, with red-brown seeds, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy. Shoot growth peaks in autumn and spring (House 1997).

Fire response: Resprouts from base and epicormic buds.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Host plant of Cerambycid longicorn beetles *Agrianome spinicollis* (Hawkeswood & Dauber 1991), *Eurynassa australis* (Hawkeswood 1992b), *Adrium artifex*, *Sisyrium ibidionoides* (Hawkeswood 1993). Host-specific to gall-forming psyllid/lerp insect *Glycaspis amplificata* (Moore 1988).

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld.

Distribution Sydney area: Coastal areas.

Select locations: CC: Wattagan SF, Morisset, Yarramalong, Terrigal, Woy Woy, Arcadia, Epping, Brush Farm, Dundas, North Rocks, Beverly Hills.

	Habitat
Habitat: Shale forest.	
Altitude: 0–400 m	Annual rainfall: 1000–1400 mm
Typical local abundance: Frequent–occasional.	
Vegetation: Moist open-forest e.g. with <i>Syncarpia glomulifera</i> , <i>Eucalyptus paniculata</i> , <i>E. punctata</i> , <i>E. deanei</i> (e.g. Turpentine–Ironbark Forest of Benson & Howell 1994).	
Substrate: Clay soils on shale, medium nutrients.	
Exposure: Sheltered.	
	Conservation
Conservation: Southern geographical limit Beverly Hills, but now rare due to clearing of shale forest.	

Eucalyptus agglomerata

MYRTACEAE

Blue-leaved Stringybark

Life history

Growth form: Tree generally 10–30 m high with persistent stringy bark.	
Vegetative spread: No.	
Longevity: More than 100 years.	
Primary juvenile period:	
Flowers: White, March–December.	
Fruit/seed: Woody capsule 5–10 mm diam., retained on tree for up to a year.	
Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.	
Fire response: Resprouts from epicormic buds.	
Interaction with other organisms: Host-specific to gall-forming psyllid/lerp insect <i>Glycaspis encystis</i> (Moore 1988).	

Distribution

Status/origin: Native.	
Botanical subregions: NC CC SC CT ST CWS; Vic.	
Distribution Sydney area: Widespread.	
Select locations: CC: Mt Warrawolong, Kulnura, Bilpin, Gosford, Cowan, Springwood, Nortons Basin, Bargo. CT: Nullo Mountain, Hazelbrook, Black Springs, Kowmung River, Wombeyan Caves, Hill Top, Mittagong, Wingello.	

Habitat

Habitat: Hillsides.	
Altitude: 0–1000 m	Annual rainfall: 800–1200 mm
Typical local abundance: Frequent.	
Vegetation: Dry open-forest e.g. with <i>Eucalyptus piperita</i> , <i>E. punctata</i> , <i>E. sparsifolia</i> , <i>E. crebra</i> , <i>E. sieberi</i> , <i>E. radiata</i> , <i>E. pilularis</i> .	
Substrate: Sandy loam over sandstone conglomerate, quartzite, low to medium nutrients, well-drained.	
Exposure: Full sun to light shade.	
	Conservation
Conservation: Widespread and probably adequately conserved.	

Eucalyptus aggregata

MYRTACEAE

Black Gum

Life history

Growth form: Tree to 18 m high, with persistent grey to grey-black fibrous-flaky bark throughout.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, November–May.

Fruit/seed: Woody capsule 3–5 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT ST; Vic.

Distribution Sydney area: Tablelands.

Select locations: CT: Capertee, Orange, Wallerawang, Hartley Vale, Oberon, Jenolan Caves, Burruga, Porters Retreat, Bindook Swamp, Laggan, Berrima, Wingello.

Habitat

Habitat: Cold flats and margins of swamps.

Altitude: 800–1200 m **Annual rainfall:** 600–900 mm

Typical local abundance: Frequent–occasional.

Vegetation: Woodland e.g. with *Eucalyptus stellulata*, *E. pauciflora*, *E. dives*, and grassy understorey e.g. with *Chionochloa pallida*, *Poa labillardieri*.

Substrate: Alluvial soils along poorly-drained creeks and cold flats, medium nutrients.

Exposure:

Conservation

Conservation: Capertee is the northern geographical limit; appears to be poorly conserved, much of habitat is cleared or grazed.

Eucalyptus albens

MYRTACEAE

White Box

Life history

Growth form: Tree to 25 m high, with fibrous flaky bark, smooth above, grey, shedding in short ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Creamy white, August–September.

Fruit/seed: Woody capsule 6–15 mm long, usually with 2 seeds, retained for ?1 year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.

Fire response:

Interaction with other organisms: Seed eaten by Gang-gang Cockatoo *Callocephalon fimbriatus*, nectar eaten by Little Lorikeet *Glossopsitta pusilla* (Lepschi 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978) and cattle (Blakely 1965). Bees gather pollen and nectar (Blakely 1965).

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS; Qld, Vic., S.A.

Distribution Sydney area: Bathurst–Orange.

Select locations: CT: Yerranderie, Glen Davis, Hill End, Wattle Flat, Bathurst, Blayney, Junction Reefs, Cadia, Trunkey Creek, Tuena.

Habitat

Habitat: Hillside and slopes.

Altitude: 300–1000 m **Annual rainfall:** 600–800 mm

Typical local abundance: Dominant–frequent.

Vegetation: Open-forest e.g. with *Eucalyptus melliodora*, *E. goniocalyx*; woodland e.g. with *Eucalyptus macrorhyncha*, *E. polyanthemos*, *E. goniocalyx*, ground cover *Stipa* sp., *Danthonia* sp., *Aristida* sp.

Substrate: Clay soils on shales, quartzite, metamorphics, igneous rocks, medium to high nutrient soils, well-drained.

Exposure:

Conservation

Conservation: Originally extensive over large areas but now cleared or reduced to remnant trees. Probably inadequately conserved.

Eucalyptus amplifolia* subsp. *amplifolia**MYRTACEAE**

Cabbage Gum

Life history

Growth form: Tree to 30 m high with smooth, flaking bark.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December–January.

Fruit/seed: Woody capsule 4–6 mm long, probably held on tree while mature May–October.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind i.e. about 20 m, or gravity. No dormancy, no soil-stored seedbank. Seedling recruitment not fire related. Germination 1–3 weeks (A. Bofeldt pers. comm.).

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Prolific pollen producer and supplementary source of nectar for bees (Clemson 1985). Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Predated by Christmas Beetles (Elliot & Jones 1986).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST.

Distribution Sydney area: Widespread on coast.

Select locations: CC: Dooralong, Kurrajong, Richmond, Mulgoa, Fairfield, Cobbitty, Shellharbour, Kangaroo Valley, Sutton Forest. CT: Megalong Valley.

Habitat

Habitat: Usually on low sites or along watercourses.

Altitude: 0–800 m **Annual rainfall:** above 700 mm

Typical local abundance: Frequent.

Vegetation: Grassy woodland e.g. associated with *Eucalyptus tereticornis*, *Melaleuca* species.

Substrate: Deep loamy soil, from shaley alluvium, medium nutrients. Watertable mostly high, moisture supply intermittent, fresh. On Quaternary alluvium, Budgong Sandstone in Illawarra (A. Bofeldt pers. comm.).

Exposure: Full sun–light shade.

Conservation

Conservation: Conservation status unknown. Not conserved in Illawarra (A. Bofeldt pers. comm.).

Eucalyptus apiculata

MYRTACEAE

Life history

Growth form: Mallee to 4 m high, with smooth white, grey or green bark shedding in ribbons. Intergrades with *Eucalyptus stricta* at O'Hares Creek (Keith 1994).

Vegetative spread: No.

Longevity: Long–indefinite.

Primary juvenile period:

Flowers: White, December–March.

Fruit/seed: Woody capsule 6–9 mm long, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy. Germination 1–3 weeks (A. Bofeldt pers. comm.).

Fire response: Stems killed, resprouts from lignotuber.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC CT.

Distribution Sydney area: Sporadic occurrences between Linden and Berrima.

Select locations: CC: Woodford, Linden, Medway, Darkes Forest, Avon River.

CT: Wanganderry Plateau, Hill Top, Mittagong, Joadja Plateau.

Habitat

Habitat: Rocky outcrops.

Altitude: 300–700 m

Annual rainfall: 900–1000 mm

Typical local abundance: Frequent–occasional.

Vegetation: Heath and mallee vegetation e.g. with *Eucalyptus sclerophylla*, *E. sieberi*, *E. piperita*, *Corymbia gummifera* and shrubs e.g. *Hakea dactyloides*, *Leptospermum trinervium*, *Calytrix tetragona*, *Banksia marginata*; restioid heath, mallee heath, rock pavement heath (Keith 1994).

Substrate: Skeletal sandy soil on sandstone, low nutrients, well-drained.

Exposure: Full sun.

Conservation

Conservation: Rare and localised, coded 2R on national rare species list (Briggs & Leigh 1996).

Eucalyptus aquatica

MYRTACEAE

Broad-leaved Sally

Life history

Growth form: Mallee generally 3–5 m high, with grey to grey-brown bark shedding in long ribbons.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: January–February.

Fruit/seed: Woody capsule 4–7 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Penrose–Wingello area.

Select locations: CT: Hanging Rock Swamp, Paddys River, Wingello.

Habitat

Habitat: Open swampy flats.

Altitude: 600–700 m **Annual rainfall:** 1000 mm

Typical local abundance: Frequent–occasional.

Vegetation: Shrubswamp e.g. with *Leptospermum juniperinum*, *L. obovatum*, *L. myrtifolia*, *Baeckea utilis*, *Gymnoschoenus sphaerocephalus*, *Gleichenia dicarpa*.

Substrate: Peaty brown soil along creek and in swamp, permanently waterlogged, low nutrients.

Exposure:

Conservation

Conservation: Rare local endemic species, coded 2VCa on national rare species list (Briggs & Leigh 1996), very poorly known. Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*.

Eucalyptus baeuerlenii**MYRTACEAE**

Baeuerlen's Gum

Life history

Growth form: Mallee or small tree, with smooth grey, brown, copper or green bark shedding in long ribbons. At exposed sites, trees stunted or mallee form.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, June–August.

Fruit/seed: Woody capsule 6–9 mm long, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Probably resprouts from base.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: SC CT ST.

Distribution Sydney area: Upper Blue Mountains.

Select locations: CT: Blackheath, Wentworth Falls.

Habitat

Habitat: Sheltered sloping moist sites, terraces between cliffs.

Altitude: 900–1000 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Frequent.

Vegetation: Cliffside vegetation e.g. with *Eucalyptus rupicola*, *Eucalyptus sieberi*, *Hakea salicifolia*, *Ceratopetalum gummiferum*.

Substrate: Associated with sandstone cliffs, but probably in soil on shale strata, low nutrients.

Exposure: South-facing slopes.

Conservation

Conservation: Restricted range, coded 3RCa on national rare species list (Briggs & Leigh 1996). Wentworth Falls is northern geographical limit.

Eucalyptus baueriana

MYRTACEAE

Blue Box

Life history

Growth form: Tree to 20 m high with persistent fibrous-flaky bark on trunk and large branches. Tree often mature in the juvenile leaf phase (Brooker & Kleinig 1983).

Vegetative spread: No.

Longevity: More than 200 years.

Primary juvenile period:

Flowers: White, May–November.

Fruit/seed: Woody capsule 5–7 mm long.

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank. Slow-growing.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC; Vic.

Distribution Sydney area: Mainly Nepean River and Georges River.

Select locations: CC: Wollemi Creek, Mogo Creek, North Richmond, St Marys, Cabramatta, Milperra, Liverpool, Bents Basin, Picton, Thirlmere.

Habitat

Habitat: Floodplains and riverflats.

Altitude: 0–500 m **Annual rainfall:** 700–1000 mm

Typical local abundance: Frequent.

Vegetation: Floodplain forest e.g. with *Angophora subvelutina*, *Eucalyptus tereticornis*.

Substrate: Alluvial soils, very fertile–fertile. Watertable mostly high, moisture supply continuous, fresh.

Exposure:

Conservation

Conservation: Vulnerable in Western Sydney (Howell et al. 1995). Northern geographical limit is Putty.

Eucalyptus bensonii

MYRTACEAE

Life history

Growth form: Tree or mallee 3–8 m high, with grey to red-brown fibrous-flaky or stringy bark persistent on trunk and larger branches, shedding in short ribbons.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers:

Fruit/seed: Woody capsule 7–9 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from base.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Glen Davis area.

Select locations: CT: Mt Coricudgy, Bare Rock Bluff, Mt Boonbourwa.

Habitat

Habitat: Sandstone ridges and saddles.

Altitude: 700–800 m **Annual rainfall:** 600–800 mm

Typical local abundance: Frequent–occasional.

Vegetation: Mallee scrub heath e.g. with *Eucalyptus laophila*, *E. sparsifolia*, *E. multicaulis*, *Banksia ericifolia*, *Leptospermum trinervium*, *Allocasuarina distyla*.

Substrate: Sandy skeletal soils on Narrabeen sandstone, low nutrients.

Exposure: Exposed full sun.

Conservation

Conservation: Local endemic restricted to Glen Davis area with all known populations in Wollemi NP. Coded 2RC-t on national rare species list (Briggs & Leigh 1996).

Eucalyptus benthamii**MYRTACEAE**

Nepean River Gum

Life history

Growth form: Tree to 40 m high with smooth bark shedding in short ribbons or flakes.

Vegetative spread: No.

Longevity: More than 200 years (Benson 1985).

Primary juvenile period:

Flowers: White, March–May. Late September (Corringham 1988).

Fruit/seed: Woody capsule 4–5 mm long, shed at maturity or soon after, June–December.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind, i.e. about 20 m, or gravity. No soil-stored seedbank. Seedling recruitment follows floods or soil disturbance and requires open sites. Seedling recruitment after fire poor, and outcompeted by other vegetation.

Fire response: Resprouts from epicormic buds or basal sprouts, but may be killed by intense fires, dying immediately or soon after.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Confined to Nepean River. Camden to Penrith, and Kedumba Valley.

Select locations: CC: Grose River junction, Wallacia, Bents Basin, Cobbitty, The Oaks, Kedumba Creek, Coxs River.

Habitat

Habitat: Riverbanks.

Altitude: 0–100 m

Annual rainfall: 700–1000 mm

Typical local abundance: Locally abundant.

Vegetation: Tall open-forest e.g. with *Eucalyptus baueriana*, *Angophora subvelutina*, *E. elata* (Camden White Gum Forest of Benson 1992). In flood-disturbed areas (at Kedumba) regenerating with *Lomandra longifolia*, *Pteridium esculentum*, *Banksia ericifolia*, *Leptospermum flavescens*, *Gahnia aspera*, *Imperata cylindrica*, *Grevillea asplenifolia*, *G. mucronatus*, *Acacia longifolia*, *Carex appressa*, *Acacia parramattensis* (R. Paine pers. comm.).

Substrate: Sandy alluvial coarse deep yellow sand or brown yellow deep sandy loam, infertile–fertile. Watertable mostly high, moisture supply intermittent, fresh. Soil pH 5.5–6.5 (Corringham 1988).

Exposure: Full sun–light shade.

Conservation

Conservation: Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Restricted to lower Nepean River and Kedumba Creek, coded 2VCi on national rare species list (Briggs & Leigh 1996).

Eucalyptus beyeriana

MYRTACEAE

Life history**Growth form:** Tree generally 10–20 m high, with persistent grey-black 'ironbark' throughout.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White, August–November.**Fruit/seed:** Woody capsule 4–6 mm long,**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind and gravity, no dormancy.**Fire response:** Resprouts from epicormic buds.**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CWS NWS.**Distribution Sydney area:** Widespread.**Select locations:** CC: Putty Rd, Maraylya, Castlereagh, Llandillo, Blaxland, Nortons Basin, Fairfield, Panania, Yerranderie, Thirlmere, Bargo, Yerrinbool.**Habitat****Habitat:** Dry woodland on sandy soils.**Altitude:** 0–700 m **Annual rainfall:** 700–1000 mm**Typical local abundance:** Frequent.**Vegetation:** Eucalypt woodland e.g. with *Eucalyptus sclerophylla*, *E. fibrosa*, *E. parramattensis*, *E. punctata*, *Corymbia eximia*.**Substrate:** Loamy soils on Tertiary alluvium or sandstone with some shale influence, low nutrients, well-drained.**Exposure:****Conservation****Conservation:** Conservation status unknown.***Eucalyptus bicostata***

MYRTACEAE

Eurabbie

Life history**Growth form:** Tree to 40 m high, with smooth white or grey bark shedding in ribbons.Buds always warty; closely related to *E. maidenii* (Brooker & Kleinig 1983).**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** Inflorescence 3-flowered, September–January.**Fruit/seed:** Woody capsule 10–20 mm diam., July–November.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind and gravity, no dormancy.**Fire response:** Resprouts (Bell pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NT CT ST CWS SWS; Vic.**Distribution Sydney area:** Localised, Nullo Mountain, Jenolan Caves.**Select locations:** CT: Nullo Mountain, Mt Coriaday, Jenolan Caves.**Habitat****Habitat:** Open-forest.**Altitude:** 800–1200 m **Annual rainfall:** 1000 mm**Typical local abundance:** Frequent.**Vegetation:** Moist eucalypt forest e.g. with *Eucalyptus laevopinea*, *E. viminalis*.**Substrate:** Clay soil on basalt or sandstone with basalt downwash, medium nutrients.**Exposure:****Conservation****Conservation:** Localised occurrences. Conservation status unknown, reported from Nullo Mountain SF.

Eucalyptus blakelyi

MYRTACEAE

Blakely's Red Gum

Life history

Growth form: Tree to 20 m high, with smooth patchy white, grey to brown or red bark shedding in large plates or flakes.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, rarely pink, August–December. Pollen non-sticky, probably transported by wind and insects (Johnson & Burchett 1996).

Fruit/seed: Woody capsule 4–8 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy. Two-year cycle of reproduction and replacement of foliage (Landsberg 1988) however, Journet (1981) found no evidence of this, with a few flowers and much foliage produced each year.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Flowers visited by Fuscous Honeyeater *Lichenostomus fuscus* and White-plumed Honeyeater *Lichenostomus pencilatus* forages on foliage (on the New England tableland Chan 1990). Valued by the honey industry for its production of honey and pollen (Clemson 1985). Foodplant of Lawn Scarab Beetle *Sericothrips geminata* (Hughes 1974), larvae of moth, Gum Leaf Skeletoniser *Uraba lugens*, and larvae of sawfly species (family Pergidae) (CSIRO 1996). Host-specific to psyllid/lerp insect *Glycaspis rylstonensis* (Moore 198).

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS NWP; Qld, Vic.

Distribution Sydney area: Tablelands.

Select locations: CT: Upper Cudgegong River, Cherry Hill, Hill End, Mullion Range, Capertee, Winburndale, Lidsdale SF, Tarana, Bathurst, Trunkey, Wombeyan Caves, Mt Jellore.

Habitat

Habitat: Hillsides, lower slopes, riverflats and swamps.

Altitude: 700–1000 m **Annual rainfall:** 600–1000 mm

Typical local abundance: Frequent–occasional.

Vegetation: Woodland with grassy understorey e.g. with *Eucalyptus melliodora*, *Angophora floribunda*.

Substrate: Moderately fertile soils on basalt, granite, and alluvium.

Exposure: Full sun.

Conservation

Conservation: Often a remnant tree in cleared country, numbers have declined through 'die back'. Conservation status unknown.

Eucalyptus blaxlandii

MYRTACEAE

Brown Stringybark

Life history

Growth form: Tree to 30 m high, with grey to red-brown stringy bark persistent on trunk or larger branches or throughout. Occasionally stunted, mallee-like.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, October–November.

Fruit/seed: Woody capsule 7–13 mm diam., fruits retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT ST.

Distribution Sydney area: Mainly Tablelands.

Select locations: CT: Nullo Mountain, Mt Coricudgy, Capertee Valley, Hassans Walls, Mt Wilson, Mt Tomah, Katoomba, Jenolan Caves, Kanangra Walls, Yerranderie, Mt Jellore, Wingello.

Habitat

Habitat: Ridges and slopes on elevated sandstone country.

Altitude: 700–1200 m **Annual rainfall:** 700–1200 mm

Typical local abundance: Frequent–occasional.

Vegetation: Open-forest e.g. with *Eucalyptus viminalis*, *E. radiata*, *E. piperita*, *E. oreades*; woodland e.g. with *Eucalyptus sieberi*, *E. mannifera*.

Substrate: Loamy soils on basalt, sandstones, shaley, slate, quartzite, well-drained, medium nutrients.

Exposure:

Conservation

Conservation: Probably adequately conserved e.g. in Blue Mountains, Kanangra Boyd, Wollemi NP.

Eucalyptus bosistoana

MYRTACEAE

Coast Grey Box

Life history

Growth form: Tree to 20–30 m high, with grey fibrous-flaky bark persistent on lower or full trunk, smooth above, white to grey.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, November–February.

Fruit/seed: Woody capsule 4–7 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy. Germination 1–3 weeks (A. Bofeldt pers. comm.).

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST; Vic.

Distribution Sydney area: Mainly western Sydney and Warragamba area.

Select locations: CC: Wölgan Valley, St Marys, Kemps Creek, Cabramatta, Bankstown, Picnic Point, Oakdale, West Dapto, Albion Park. CT: Grose Valley, Wingello.

Habitat

Habitat: Creeks, riverflats, floodplains, lower slopes.

Altitude: 0–600 m **Annual rainfall:** 700–1100 mm

Typical local abundance: Occasional.

Vegetation: Open-forest e.g. with *Eucalyptus tereticornis*, *Angophora floribunda*, *Eucalyptus quadrangulata*, *E. muelleriana*, *E. punctata*, *E. moluccana*, *Melaleuca decora*, *M. styphelioides*.

Substrate: Clay soils on shale, alluvium. On Bumbo Latite, Berry Siltstone, Budgong Sandstone in Illawarra (A. Bofeldt pers. comm.).

Exposure: Full sun. Limited shade-tolerance (A. Bofeldt pers. comm.).

Conservation

Conservation: Vulnerable in Western Sydney (Benson & McDougall 1991) and poorly conserved. Habitat threatened in Illawarra, not conserved (A. Bofeldt pers. comm.). Wolgan Valley is northern geographical limit.

Eucalyptus botryoides**MYRTACEAE**

Bangalay

Life history

Growth form: Tree generally to 20 m high. Lignotubers 4–6 m wide (Lacey 1983).

Vegetative spread: Fallen stems able to produce roots (Lacey et al. 1982).

Longevity: 600 years for radio-carbon dating of carbonised wood fragments associated with lignotubers (Williams & Brooker 1997).

Primary juvenile period:

Flowers: White, January–April.

Fruit/seed: Woody capsule 7–12 mm long, probably shed at maturity, July–September (K. Knox pers. comm.).

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. 20 m. No soil-stored seedbank. Seeds require light for germination, optimum temperature 25°C (Langkamp 1987).

Fire response: Resprouts from epicormic buds and lignotuber.

Interaction with other organisms: Browsed by Koala *Phascolarctos cinereus*; suffers extensively from psyllid insect attack (Hawkes 1978). Ants feed on nectar (K. Knox pers. comm.). Large branches may be shed, without warning (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: CC SC; Vic.

Distribution Sydney area: Coast south from the Hunter River.

Select locations: CC: Norah Head, Gosford, Manly, Mosman, Rockdale, Concord, Otford, (Seven Mile Beach, M.R).

Habitat

Habitat: Coastal headlands and dunes.

Altitude: 0–100 m **Annual rainfall:** above 700 mm

Typical local abundance: Dominant–frequent.

Vegetation: Eucalypt open-forest and woodland e.g. with *Angophora costata*.

Substrate: On alluvial flats or old beach dunes, low nutrients. Watertable mostly low, moisture supply intermittent, fresh. Mature trees salt-tolerant but not seedlings (Johnson & Burchett 1996).

Exposure:

Conservation

Conservation: Conservation status unknown.

Eucalyptus botryoides* × *saligna

MYRTACEAE

Life history

Growth form: Tree generally 20–30 m high. Populations of *E. saligna* south of Port Jackson show some genetic influence from *E. botryoides*, including some rough bark and are referred to as *Eucalyptus botryoides* × *saligna*.

Vegetative spread: No.

Longevity: More than 200 years.

Primary juvenile period:

Flowers: January–February.

Fruit/seed: Woody capsule 5–8 mm long, releasing numerous small seeds at maturity.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC

Distribution Sydney area: Coast south of Port Jackson.

Select locations: CC: Burwood (1891), Heathcote, Otford, Camden, Menangle, Bulli Pass, Mt Keira, Kangaroo Valley, Cambewarra.

Habitat

Habitat: Riverbanks and sheltered slopes.

Altitude: 0–400 m

Annual rainfall: above 700 mm

Typical local abundance: Frequent.

Vegetation: Floodplain forest e.g. with *Eucalyptus elata*, *E. viminalis*, or *E. baueriana*, *Angophora subvelutina* or moist eucalypt forest e.g. with *Eucalyptus elata*, *Syncarpia glomulifera*.

Substrate: Deep sandy loam from alluvium or clayey soils from sandstones, medium nutrient.

Exposure: Sheltered sites.

Conservation

Conservation: Conservation status unknown.

Eucalyptus bridgesiana

MYRTACEAE

Apple Box

Life history

Growth form: Tree to 20 m high, with fibrous-flaky bark persistent on trunk and larger branches, smooth grey above, shedding in short ribbons.

Vegetative spread: No.

Longevity: 100–200 years at Orange (C. Pratten pers. comm.).

Primary juvenile period:

Flowers: White, February–April. Some flowers every year on a few trees with heavier flowering every second to third season (Goodacre 1958).

Fruit/seed: Woody capsule 5–7 mm long,

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy. Seeds require light for germination, optimum temperature 25°C (Langkamp 1987).

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Host to larvae of Autumn Gum Moth *Mnesampela privata* (CSIRO 1996). Seed eaten by Gang-gang Cockatoo *Callocephalon fimbriatus*, Crimson Rosella *Platycercus elegans*, nectar eaten by Little Lorikeet *Glossopsitta pusilla* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: NC CC NT CT ST NWS CWS SWS; Vic., Qld.

Distribution Sydney area: Tablelands.

Select locations: CT: Upper Cudgegong, Charbon, Capertee Valley, Orange, Sunny Corner, Bathurst, Wallerawang, Rydal, Blayney, Hartley Vale, Rockley, Abercrombie Caves, Mittagong, Bigga, Wombeyan Caves.

Habitat

Habitat: Flats and along water courses, sometimes on slopes.

Altitude: 600–1000 m **Annual rainfall:** 600–800 mm

Typical local abundance: Frequent–occasional.

Vegetation: Grassy woodland e.g. with *Eucalyptus viminalis*, *E. melliodora*, *Angophora floribunda*, *Eucalyptus dives*, *E. stellulata*.

Substrate: Soils on alluvium, basalt, limestone, medium nutrients.

Exposure: Full sun.

Conservation

Conservation: A widespread species that has had much of its habitat cleared. Probably poorly conserved.

Eucalyptus burgessiana**MYRTACEAE****Life history**

Growth form: Mallee to 6 m high, arising from a lignotuber, with smooth grey bark shedding in ribbons.

Vegetative spread: No.

Longevity: Indefinite.

Primary juvenile period:

Flowers: White to cream, December–February.

Fruit/seed: Woody capsule 8–10 mm long, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity, no dormancy.

Fire response: Stems killed, resprouts from lignotuber.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Lower Blue Mountains.

Select locations: CC: Berambing, Mt Tomah, Faulconbridge, Linden, Springwood.

Habitat

Habitat: Ridges with rocky outcrops.

Altitude: 400–750 m **Annual rainfall:** 1000–1200 mm

Typical local abundance: Frequent.

Vegetation: Mallee shrubland e.g. with *Corymbia gummifera*, *Eucalyptus piperita*, *E. multicaulis*, *Leptospermum trinervium*, *Banksia ericifolia*, *Banksia serrata*, *Petrophile pulchella*.

Substrate: Skeletal sandy soil on sandstone, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Local endemic restricted to lower Blue Mountains, with populations within Blue Mountains NP. Coded 2RCa on national rare species list (Briggs & Leigh 1996). Probably adequately conserved.

Eucalyptus camfieldii

MYRTACEAE

Heart-leaved Stringybark

Life history

Growth form: Generally mallee 3–5 m high, with persistent bark, grey–red-brown, stringy. Juvenile leaves orbiculate, cordate, hispid.

Vegetative spread: Extensive lignotuber may be perhaps up to 25 m across (what appears to be a large number of plants may be only one, or few individuals).

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, April–December, variable.

Fruit/seed: Woody capsule 7–12 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Germinates without treatment but seedlings rarely reported.

Fire response: Resprouts from lignotuber and epicormic buds. During 1980s trees at North Head appeared to be dying in absence of fire (30 years unburnt) due to competition from taller vegetation (D.H.B.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Coast, Norah Head to Waterfall.

Select locations: CC: Norah Head, Peats Ridge, Duffys Forest, Mt Colah, Hornsby, East Killara, North Head, Mosman, Heathcote, Waterfall.

Habitat

Habitat: Ridgetops.

Altitude: 0–300 m

Annual rainfall: 1200–1400 mm

Typical local abundance: Occasional.

Vegetation: Heath e.g. with *Angophora costata*, *Corymbia gummifera*, *Angophora hispida*, *Eucalyptus sieberi*, *Allocasuarina distyla*, *Leptospermum trinervium*, *Banksia oblongifolia*.

Substrate: Sandy soils over sandstone, loamy soil with coffee rock, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 2VCi on national rare species list (Briggs & Leigh 1996). Population sizes difficult to measure because of extensive lignotubers.

Eucalyptus camphora* subsp. *camphora

MYRTACEAE

Broad-leaved Sally

Life history

Growth form: Mallee or small tree generally 3–6 m high, with smooth grey-black shortly fibrous compact bark persistent on lower trunk, smooth above.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, August–December.

Fruit/seed: Woody capsule 4–5 mm long, August–December.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Slow growth (Elliot & Jones 1986).

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Nullo Mountain to Megalong Valley.

Select locations: CT: Nullo Mountain, Dunns Swamp, Ganguddy Creek, Megalong Valley.

Habitat

Habitat: Open swampy flats.

Altitude: 600–700 m **Annual rainfall:** 700–800 mm

Typical local abundance: Dominant–frequent.

Vegetation: Low woodland e.g. with *Eucalyptus bridgesiana*, *Callistemon* sp., *Geranium neglectum*, *Isotoma fluviatilis*.

Substrate: Alluvium from sandstone, granite, low nutrients, poorly-drained and often water-logged (Simmons & Brown 1986).

Exposure: Sheltered sites, full sun.

Conservation

Conservation: Local endemic taxon restricted to sites in Upper Cudgegong Valley and Megalong Valley. Vulnerable, many sites grazed.

Eucalyptus cannonii**MYRTACEAE**

Red Stringybark

Life history

Growth form: Tree to 15 m high, with grey to red-brown persistent bark.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White–cream, January–April (Elliot & Jones 1986).

Fruit/seed: Woody capsule 10–15 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT CWS.

Distribution Sydney area: Rylstone to Lithgow.

Select locations: CT: Hargraves, Mt Towinhingy, Kandos, Ilford, Capertee, Pearsons Lookout, Winburndale, Lidsdale, Marrangaroo.

Habitat

Habitat: Hillslopes and flats.

Altitude: 800–1100 m **Annual rainfall:** 600–800 mm

Typical local abundance: Rare to frequent/dominant.

Vegetation: Woodland e.g. with *Eucalyptus rossii*, *E. sparsifolia*, *E. mannifera*, *E. polyanthemos*, *E. melliodora*, *E. bridgesiana*, *E. viminalis*, *E. dalrympleana*; Tablelands Grassy Woodland Complex and Talus Slope Woodland (described in Benson & Keith 1990).

Substrate: Shallow soils on shaley sandstone hillsides, on sandstone below basalt and occasionally on basalt soils, low to medium nutrients, well-drained.

Exposure:

Conservation

Conservation: Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 2VCI on national rare species list (Briggs & Leigh 1996).

Eucalyptus capitellata

MYRTACEAE

Brown Stringybark

Life history**Growth form:** Small tree to 20 m high with persistent, grey to red-brown stringy bark.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White, December–February.**Fruit/seed:** Woody capsule 8–10 mm long, retained on tree for up to a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:** Resprouts from epicormic buds.**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC.**Distribution Sydney area:** Coast, Morisset to Royal NP.**Select locations:** CC: Morisset, Wyee, Peats Ridge, Wondabyne, Mosman Bay, St Ives, Frenchs Forest, Northbridge, Royal Botanic Gardens, Birrong, Kogarah, Panania, Revesby, Sutherland, Audley, Uloola Track.**Habitat****Habitat:** Sandstone ridges.**Altitude:** 0–400 m**Annual rainfall:** 1000–1400 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Woodland e.g. with *Eucalyptus sieberi*, *E. haemastoma*; or scrub e.g. with *Angophora hispida*.**Substrate:** Ridges, clay soil with ironstone gravel ('laterite'), sometimes on sandstone with residual shale caps.**Exposure:** Full sun.**Conservation****Conservation:** Now restricted to localised populations, uncommon.***Eucalyptus cinerea***

MYRTACEAE

Argyle Apple

Life history**Growth form:** Tree to 15 m high, with red-brown to grey-brown shortly fibrous or stringy bark persistent on trunk and larger branches, smooth above, grey, shedding in short ribbons.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White, October–December, inflorescence 3-flowered. Stamens ripen before stigmas, which become receptive for 2–3 days after the operculum detaches; the sticky pollen is avidly collected by birds and insects so there is little left after the first day of flower opening (Johnson & Burchett 1996).**Fruit/seed:** Woody capsule 5–9 mm diam.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds require light for germination, optimum temperature 25°C (Langkamp 1987).**Fire response:****Interaction with other organisms:** Foodplant of moth caterpillar *Trichiocercus sparshalli* (Coupar & Coupar 1992). Host to larvae of Autumn Gum Moth *Mnesampela privata* (CSIRO 1996). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Seed eaten by Crimson Rosella *Platyercus elegans* (Lepschi 1993).

Distribution**Status/origin:** Native.**Botanical subregions:** CT ST.**Distribution Sydney area:** Tablelands.**Select locations:** CT: Wattle Flat, Tarana, Abercrombie, Berrima, Belanglo, Penrose, Wingello.**Habitat****Habitat:** Hillsides and ridges.**Altitude:** 700–1000 m **Annual rainfall:** 600–1000 mm**Typical local abundance:** Frequent.**Vegetation:** Often an understorey species in grassy or shrubby woodland e.g. with *Eucalyptus blakelyi*, *E. albens*, *E. goniocalyx*, *E. polyanthemos*, *E. macrorhyncha*.**Substrate:** Shallow soils e.g. on granite, low nutrients.**Exposure:****Conservation****Conservation:** Conservation status unknown.***Eucalyptus consideniiana*****MYRTACEAE**

Yertchuk

Life history**Growth form:** Tree generally about 10 m high, sometimes mallee-like, with persistent grey shortly fibrous bark, prickly, smooth above, grey, shedding in ribbons.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White, November–December. Flowers yield a large quantity of nectar & pollen (Elliot & Jones 1986).**Fruit/seed:** Woody capsule 5–10 mm long, retained for up to a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:** Resprouts from epicormic buds.**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST; Vic.**Distribution Sydney area:** Widespread, Wollemi and southern Blue Mountains.**Select locations:** CC: Mellong Creek, Womerah Range, Wisemans Ferry, Springwood, Oakdale, Audley. CT: Mt Coricudgy, Woodford, Barrengarry Mountain, Wingello.**Habitat****Habitat:** Sandstone ridges.**Altitude:** 0–1000 m **Annual rainfall:** 900–1600 mm**Typical local abundance:** Frequent.**Vegetation:** Eucalypt open-forest; woodland e.g. with *Eucalyptus sieberi*, *Corymbia gummifera*, *Angophora costata*, *Eucalyptus sparsifolia*, *E. piperita*, *E. agglomerata*.**Substrate:** Shallow soils on sandstone, low nutrients. Well-drained.**Exposure:** Full sun.**Conservation****Conservation:** Probably adequately conserved in Wollemi and Blue Mountains NP, but conservation of more southerly populations not known. Coricudgy area is northern geographical limit.

Eucalyptus copulans

MYRTACEAE

Life history**Growth form:** Tree to 10 m high, with smooth grey or green bark shedding in ribbons.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** Inflorescence 11-flowered or more, March.**Fruit/seed:** Woody capsule 4–6 mm long.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CT.**Distribution Sydney area:** Wentworth Falls.**Select locations:** CT: Jamieson Creek.**Habitat****Habitat:** Swampy soil.**Altitude:** 870 m**Annual rainfall:** 1400 mm**Typical local abundance:** Rare.**Vegetation:** Open-woodland e.g. with *Eucalyptus sclerophylla*.**Substrate:** Swampy sandy soil.**Exposure:****Conservation****Conservation:** Listed as Endangered (schedule 1) under NSW *Threatened Species Conservation Act 1995*, coded 2E on national rare species list (Briggs & Leigh 1996). One plant in wild at Wentworth Falls, reported as stabilised hybrid (J. Benson pers. comm.).***Eucalyptus corticosa***

MYRTACEAE

Life history**Growth form:** Tree to 20 m high, with thick fibrous grey-brown to red-brown 'Apple Box' bark persistent on trunk and larger branches, smooth above shedding in short ribbons.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White–cream, April.**Fruit/seed:** Woody capsule 4–6 mm long, August–November.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CT.**Distribution Sydney area:** Currant Mountain Gap to Coricudgy.**Select locations:** CT: Kelgoola.**Habitat****Habitat:** Sandstone ridges.**Altitude:** 700–800 m**Annual rainfall:** 700 mm**Typical local abundance:** Frequent.**Vegetation:** Eucalypt woodland e.g. with *Eucalyptus rossii*, *E. dives*, *E. piperita*, *E. mannifera*.**Substrate:** Shallow soils on flats between sandstone outcrops, low nutrients**Exposure:****Conservation****Conservation:** Local endemic species restricted to Coricudgy area, probably inadequately conserved.

Eucalyptus crebra

MYRTACEAE

Narrow-leaved Ironbark

Life history**Growth form:** Tree 10–30 m high with ironbark persistent to small branches.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, September–January.**Fruit/seed:** Woody capsule 3–7 mm long, seed shed at maturity or soon after, August–January.**Dispersal, establishment & growth:** Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank, slow-growing. Seedling recruitment not fire related.**Fire response:** Resprouts from epicormic buds.**Interaction with other organisms:** 727 species of invertebrate fauna recorded in the canopy (Williams & Woinarski 1997). Host plant of Cerambycid beetle *Pachydissus sericus* (Hawkeswood 1993), host to larvae of moth, Gum Leaf Skeletoniser *Uraba lugens* (CSIRO 1996). Foraging plant for lerp-consuming birds (Woinarski et al. 1997). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Resistant to termite attack (Froggatt 1923).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC NWS CWS NWP; Qld.**Distribution Sydney area:** Mainly western Sydney.**Select locations:** CC: Windsor, Baulkam Hills, Grose Vale, St Marys, Ingleburn, Campbelltown, Razorback, Tonalli River, Kowmung, Capertee, Picton (southern limit).**Habitat****Habitat:** Upper hillslopes.**Altitude:** 0–500 m**Annual rainfall:** 700–1100 mm**Typical local abundance:** Dominant–frequent.**Vegetation:** Grassy woodland e.g. with *Eucalyptus tereticornis*, *E. moluccana* (Cumberland Plain Woodland of Benson 1992).**Substrate:** Clay soil from Wianamatta Shale, medium nutrients. Watertable permanently low, moisture supply intermittent, fresh.**Exposure:** Full sun–light shade.**Conservation****Conservation:** Picton is southern geographical limit.

Eucalyptus cunninghamii

MYRTACEAE

Life history**Growth form:** Mallee to 3 m high, with smooth grey bark shedding in ribbons.**Vegetative spread:** No.**Longevity:** Indefinite.**Primary juvenile period:****Flowers:** White–cream, March–October.**Fruit/seed:** Woody capsule 5–7 mm long, probably retained for up to a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:** Stems killed, resprouts from base.**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CT.**Distribution Sydney area:** Upper Blue Mountains.**Select locations:** CT: Mt Banks, Blackheath, Katoomba, Wentworth Falls, Kings Tableland, Mt Solitary, Wanganderry Plateau.**Habitat****Habitat:** Slopes and cliffs of sandstone escarpments.**Altitude:** 700–1000 m **Annual rainfall:** 900–1400 mm**Typical local abundance:** Frequent.**Vegetation:** Mallee heath e.g. with *Eucalyptus stricta*, *Allocasuarina nana*, *A. distyla*, *Leptospermum trinervium*, *Banksia ericifolia*, *Isopogon anemonifolius*.**Substrate:** Skeletal sandy soil on sandstone, low nutrients.**Exposure:** Exposed sites.**Conservation****Conservation:** Local endemic, with populations within Blue Mountains NP, coded 2Rca on national rare species list (Briggs & Leigh 1996).***Eucalyptus cypellocarpa***

MYRTACEAE

Monkey Gum

Life history**Growth form:** Tree generally 10–30 m high, with smooth, white, grey or yellow bark, shedding in long ribbons.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, December–February. Flowers annually (House 1997).**Fruit/seed:** Woody capsule 5–10 mm long, retained for some time.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds require light for germination, optimum temperature 20–25°C (Langkamp 1987).**Fire response:** Resprouts (Bell pers. comm.) from lignotuber and from epicormic buds**Interaction with other organisms:** Foodplant of moth larvae *Melanodes anthracitaria*, *Marane melanospila* and *Entometa fervens* (Coupar & Coupar 1992).**Distribution****Status/origin:** Native.**Botanical subregions:** CC SC NT CT ST NWS; Vic.**Distribution Sydney area:** Widespread.**Select locations:** CC: W. Dapto. CT: Mt Coricudgy, Mt Cameron, Mt Wilson, Mt Blaxland, Kanimbla Valley, Blackheath, Wentworth Falls, Jenolan Caves, Kanangra Walls, Kowmung, Yerranderie, Mt Werong, Bindook Heights, Mittagong, Penrose.

	Habitat
Habitat: Sheltered valleys and hillsides.	
Altitude: 0–1000 m	Annual rainfall: 900–1400 mm
Typical local abundance: Frequent.	
Vegetation: Open-forest e.g. with <i>Eucalyptus radiata</i> , <i>E. blaxlandii</i> , <i>E. sieberi</i> , <i>Angophora costata</i> , <i>Eucalyptus fastigata</i> , <i>E. viminalis</i> .	
Substrate: Deep soils on basalt, slate, quartzite, sandstone, medium nutrients.	
Exposure: Sheltered sites, light shade–full sun.	
	Conservation
Conservation: Widespread and probably adequately conserved.	

Eucalyptus dalrympleana subsp. *dalrympleana*

MYRTACEAE

Mountain Gum

	Life history
Growth form: Tree to 40 m high; bark smooth or sometimes with a persistent short stocking on lower trunk, grey, fibrous-flaky, white grey pink or yellow above, shedding in long ribbons.	
Vegetative spread: No.	
Longevity: More than 100 years.	
Primary juvenile period:	
Flowers: White, March–May, inflorescence 3-flowered.	
Fruit/seed: Woody capsule 5–9 mm diam., retained on tree for some time.	
Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds require light for germination, optimum temperature 20–25°C (Langkamp 1987).	
Fire response: Resprouts (Bell pers. comm.), seedlings with lignotubers resprouted following fire (Noble 1984).	
Interaction with other organisms: Host plant of Cerambycid beetle <i>Tessaroma undatum</i> (Hawkeswood 1993). Browsed by Koala <i>Phascolarctos cinereus</i> (Hawkes 1978).	
	Distribution

Status/origin: Native.	
Botanical subregions: CT ST; Vic, Tas.	
Distribution Sydney area: Tablelands.	
Select locations: CT: Capertee, Newnes SF, Blackmans Flat, Yetholme, Mt Wilson, Katoomba, Jenolan Caves, Kanangra Tops, Yerranderrie, Wombeyan Caves, Wingello.	
	Habitat
Habitat: Hillsides and valleys.	
Altitude: 700–1200 m	Annual rainfall: 700–1400 mm
Typical local abundance: Frequent.	
Vegetation: Eucalypt open-forest with grassy understorey e.g. with <i>Eucalyptus bridgesiana</i> , <i>E. dives</i> , <i>Poa sieberiana</i> , <i>Eucalyptus blaxlandii</i> , <i>E. pauciflora</i> , <i>E. radiata</i> .	
Substrate: Sandy or loamy soils on alluvium, granite, quartzite, rarely on sandstone, medium nutrients.	
Exposure:	
	Conservation
Conservation: Conservation status unknown.	

Eucalyptus dawsonii

MYRTACEAE

Slaty Gum

Life history

Growth form: Tree to 30 m high, with white, grey or yellow smooth bark shedding in short ribbons.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, October–November.

Fruit/seed: Woody capsule 3–5 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC CWS.

Distribution Sydney area: Capertee Valley.

Select locations: CC: Glen Davis.

Habitat

Habitat: Talus slopes below sandstone cliffs.

Altitude: 600–700 m **Annual rainfall:** 650 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt woodland e.g. with *Eucalyptus punctata*.

Substrate: Loamy soils on talus slopes below sandstone cliffs, medium nutrients.

Exposure:

Conservation

Conservation: Glen Davis is the southern geographical limit, conservation status unknown.

Eucalyptus dealbata

MYRTACEAE

Tumbledown Red Gum

Life history

Growth form: Small tree to 15 m high, with smooth white and grey or grey-brown bark shedding in large plates or flakes.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, November.

Fruit/seed: Woody capsule 4–6 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts (Bell pers. comm.).

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Valued for honey production and important source of pollen (Clemson 1985).

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS NWP; Qld, Vic.

Distribution Sydney area: Mainly Bathurst area.

Select locations: CT: Capertee Valley, Bathurst, Georges Plains, O'Connell, Lyndhurst, Tuena, Bigga.

Habitat**Habitat:** Hilly country.**Altitude:** 600–700 m **Annual rainfall:** 600–800 mm**Typical local abundance:** Occasional to dominant.**Vegetation:** Grassy woodland. Associated with *Callitris endlicheri*, *Brachychiton populneus* (Clemson 1985).**Substrate:** Skeletal soil usually on basic rocks, low nutrients.**Exposure:****Conservation****Conservation:** Conservation status unknown.***Eucalyptus deanei*****MYRTACEAE**

Mountain Blue Gum

Life history**Growth form:** Tall shaft-like tree to 40 m high, grey to grey-brown bark often persistent on lower trunk with fibrous-flaky white, cream or grey bark above, shedding in short ribbons or plates.**Vegetative spread:** No.**Longevity:** 100–300 years.**Primary juvenile period:** 10–15 years.**Flowers:** White, March–April.**Fruit/seed:** Capsule 4–6 mm diam., mature fruits on tree February to December as canopy-stored seedbank. Probably gradually shed during this time. Seeds shed annually (Elliot & Jones 1986).**Dispersal, establishment & growth:** Diaspore: seed, wind-dispersed locally, up to 50 m, seeds germinate without treatment, no dormancy. Seedlings establish in open areas.**Fire response:** Resprouts from epicormic buds (Bell pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC CT.**Distribution Sydney area:** Mainly Gosford–Wyang area and lower Blue Mountains.**Select locations:** CC: Mt Warrawolong, Bucketty, Mooney Mooney Creek, Grose Valley, Springwood, Kedumba Valley, Erskine Creek, Oakdale, Burrangorang Valley, Thirlmere Lakes. CT: Hazelbrook.**Habitat****Habitat:** Sheltered valleys on lower slopes.**Altitude:** 0–500 m **Annual rainfall:** 1000–1400 mm**Typical local abundance:** Dominant–frequent.**Vegetation:** Moist tall open-forest to open-forest e.g. with *Eucalyptus punctata*, *Angophora floribunda*, *Allocasuarina torulosa*, occasionally *Syncarpia glomulifera*, *Eucalyptus saligna*.**Substrate:** Deep sandy alluvial soils on sandstones and shales, also on diatremes, medium to high nutrients, well-drained.**Exposure:** Sheltered sites, light shade to full sun.**Conservation****Conservation:** Probably adequately conserved.

Eucalyptus dendromorpha

MYRTACEAE

Life history

Growth form: Tree to 30 m high but often less than 15 m, sometimes a mallee, with persistent shortly fibrous compact bark on lower trunk, smooth bark above shedding in ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December–January.

Fruit/seed: Woody capsule 8–11 mm long, brown seed retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST.

Distribution Sydney area: Blue Mountains, Southern Highlands.

Select locations: CC: Linden, Mt Kembla, Albion Park. CT: Mt Wilson, Blackheath, Katoomba, Wentworth Falls, Robertson, Fitzroy Falls, Jamberoo.

Habitat

Habitat: Escarpment and hillsides above cliffs.

Altitude: 300–1000 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Frequent.

Vegetation: Moist eucalypt open-forest e.g. with *Eucalyptus sieberi*, *E. mannifera*, *E. elata*, *E. cypellocarpa*, *E. smithii*, but mostly associated with heath e.g. with *Melaleuca squarrosa*, *Leptospermum trinervium*, *Leptospermum scoparium*, *Banksia spinulosa*, *Hakea dactyloides*.

Substrate: Sandy soils on sandstone, low nutrients.

Exposure:

Conservation

Conservation: Mt Tomah is northern geographical limit; probably adequately conserved.

Eucalyptus dives

MYRTACEAE

Broad-leaved Peppermint

Life history

Growth form: Tree to 20 m high, with shortly fibrous bark persistent on trunk and larger branches, smooth above, grey, shedding in long ribbons. Leaves with strong peppermint scent when crushed (Brooker & Kleinig 1983).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, September–November. Flowering after fire within 2 years (Gill 1997).

Fruit/seed: Woody capsule 5–7 mm diam., retained on plant for some time.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seedlings grow taller among tussock grassland and shrub-dominated understoreys than in cleared areas or natural gaps and with better height growth in shrubland than grassland (Kirkpatrick 1997).

Fire response: Resprouts from lignotubers and epicormic buds (Stasser et al. 1986).

Seedlings with lignotubers resprout following fire (Noble 1987).

Interaction with other organisms: Moth larvae *Eupselia* species mine the leaves and pupate on leaf tips or twigs (Common 1990). Seed eaten by Gang-gang Cockatoo *Callocephalon fimbriatus*, Crimson Rosella *Platycercus elegans* (Lepschi 1993). Oil valued for medicinal and industrial use (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: SC NT CT ST SWS; Vic.

Distribution Sydney area: Widespread on Tablelands.

Select locations: CT: Nullo Mountain, Hargreaves, Hill End, Mullion Range, Capertee, Orange, Kirkconnell, Clarence, Tarana, Oberon, Rockley, Tuglow Caves, Wombeyan Caves, Berrima, Wingello.

Habitat

Habitat: On rises.

Altitude: 700–1200 m **Annual rainfall:** 600–1200 mm

Typical local abundance: Frequent.

Vegetation: Open-forest and woodland e.g. with *Eucalyptus radiata*, *E. macrorhyncha*, *E. viminalis*, *E. dalrympleana*.

Substrate: Shallow stony soils to deeper soils on granite, sandstone but not on limestone outcrops (at Tuglow), low nutrients.

Exposure:

Conservation

Conservation: Widespread but conservation status unknown.

Eucalyptus elata**MYRTACEAE**

River Peppermint

Life history

Growth form: Tree to 10–20 m high with persistent bark. Leaves with strong peppermint scent when crushed.

Vegetative spread: No.

Longevity: Relatively short-lived, 40–60 years?

Primary juvenile period:

Flowers: White, September–November.

Fruit/seed: Woody capsule, 4–6 mm long, mature fruits on tree November–October and probably shed as fruit matures from following year.

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank. Quick growing tree, often coloniser of disturbed sites.

Fire response: Not very fire tolerant, generally killed.

Interaction with other organisms: Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST; Vic.

Distribution Sydney area: Widespread, south from Putty area.

Select locations: CC: Colo River, Cattai Creek, Bents Basin, Cobbitty, Menangle, Kangaroo River. CT: Tonalli River, Kowmung River, Nattai River, Berrima, Tallong.

Habitat

Habitat: Mostly along streams.

Altitude: 0–1000 m **Annual rainfall:** above 700 mm

Typical local abundance: Frequent.

Vegetation: Wet or dry open-forest or woodland e.g. with *Eucalyptus saligna*, *E. tereticornis*, *E. baueriana*, *E. viminalis*, *E. fastigata*, *Angophora floribunda*, *Acacia melanoxylon*.

Substrate: Deep alluvial soils, in shale, sandstone or granite country. Watertable mostly low, moisture supply continuous, fresh.

Exposure: Light shade–full sun.

Conservation

Conservation: Putty district is northern geographical limit. Conservation status unknown.

Eucalyptus eugenioides

MYRTACEAE

Thin-leaved Stringybark

Life history**Growth form:** Tree 10–30 m high, with persistent grey to red-brown stringy bark.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, March–September, variable**Fruit/seed:** Woody capsule 4–8 mm long, retained on tree while mature for probably 12 months.**Dispersal, establishment & growth:** Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank.**Fire response:** Resprouts from epicormic buds.**Interaction with other organisms:** Host plant of Cerambycid beetle *Adrium artifex* (Hawkeswood 1993).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT CT ST CWS; Qld.**Distribution Sydney area:** Widespread.**Select locations:** CC: Olney SF, Putty, Marayong, Homebush, Cabramatta, Camden, Dapto, Kangaroo Valley. CT: Wolgan River, Jenolan Caves, Kanangra, Kanimbla Valley.**Habitat****Habitat:** Woodland. On coastal plain, ridgetops and ridge slopes in Illawarra (A. Bofeldt pers. comm.).**Altitude:** 0–800 m**Annual rainfall:** 700–1100 mm**Typical local abundance:** Frequent.**Vegetation:** Dry shrubby or grassy forest or woodland e.g. with *Eucalyptus moluccana*, *E. tereticornis*, *Eucalyptus amplifolia*, *E. longifolia*, *Melaleuca decora*, *M. styphelioides*.**Substrate:** Clay soil on shales, Wianamatta Shale in western Sydney, Narrabeen Shale in Blue Mountains; Berry Siltstone, Budgong Sandstone in Illawarra (M. Robinson pers. comm.), medium-high nutrients, well drained.**Exposure:** Full sun to light shade.**Conservation****Conservation:** Threatened and not conserved, in Illawarra (M. Robinson pers. comm.). Conservation status elsewhere unknown.***Eucalyptus fastigata***

MYRTACEAE

Brown Barrel, Cut Tail

Life history**Growth form:** Tree to 50 m high, with red-brown to grey brown shortly fibrous to stringy bark persistent on trunk and larger branches, smooth above, white to grey, shedding in large ribbons.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, December–February. Flowers annually (House 1997).**Fruit/seed:** Woody capsule 5–8 mm long, retained for up to a year. Seed weight 1.35 mg (Cremer 1977).**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Dispersal 24.3 m from parent tree when seed released at a height of 40 m in 10 km/h wind (Cremer 1977).**Fire response:** Resprouts, but may also be killed (Bell pers. comm.).**Interaction with other organisms:** Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: CC SC NT CT ST; Vic.

Distribution Sydney area: Mainly Tablelands.

Select locations: CC: Mt Warrawolong, Macquarie Pass, Jamberoo Mountain.

CT: Kirkconnell, Rydal, Clarence, Mt Wilson, Tarana, Oberon, Jenolan Caves, Mt Werong, Mt Colong, Berrima, Robertson.

Habitat

Habitat: Cold wet areas.

Altitude: 400–1200 m **Annual rainfall:** 800–1800 mm

Typical local abundance: Frequent.

Vegetation: Moist tall open-forest e.g. with *Eucalyptus blaxlandii*, *E. viminalis* (Moist Basalt Cap Forest of Benson & Keith 1990) or emergent over rainforest; open-forest e.g. with *Eucalyptus cypelloarpa*, *E. dalrympleana* (montane Gully Forest of Benson & Keith 1990) or with *Eucalyptus saligna*, *Angophora floribunda* (Mt Warrawolong), *E. quadrangulata*, *E. smithii* (Illawarra escarpment)

Substrate: Deep clay soils on basalt, quartzite, slates, medium–high nutrients. Coal Measures, Robertson basalt in Illawarra (M. Robinson pers. comm.).

Exposure: Sheltered sites. Stems resistant to snow damage (Johnson & Burchett 1996).

Conservation

Conservation: Widespread though many sites have been logged or partly cleared.

Poorly conserved at western limit, Sunny Corner area, conserved in Macquarie Pass and Budderoo National Parks (M. Robinson pers. comm.).

Eucalyptus fergusonii* subsp. *dorsiventralis**MYRTACEAE****Life history**

Growth form: Tree to 25 m high, with dark grey 'ironbark' persistent on trunk and branches.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: Inflorescence 3–7-flowered, October.

Fruit/seed: Woody capsule 6–10 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts (Bell pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Wollombi area.

Select locations: CC: Wollombi.

Habitat

Habitat: Ridges, slopes.

Altitude: 200–300 m **Annual rainfall:** 900–1000 mm

Typical local abundance: Occasional–frequent.

Vegetation: Tall eucalypt woodland e.g. with *Eucalyptus beyeri*, *E. punctata*, *Corymbia eximia*, *Angophora euryphylla*, *E. prominula*.

Substrate: Sandy soils on sandstone, low nutrients.

Exposure:

Conservation

Conservation: Coded 2RC- on national rare species list (Briggs & Leigh 1996).

Eucalyptus fergusonii* subsp. *fergusonii

MYRTACEAE

Life history**Growth form:** Tree to 25 m high, with dark grey persistent 'ironbark' throughout.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Inflorescence 3–7-flowered.**Fruit/seed:** Woody capsule 4-angled, 6–10 mm long,**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC.**Distribution Sydney area:** CC: Morisset.**Select locations:** Morisset.**Habitat****Habitat:****Altitude:** 0–100 m**Annual rainfall:** 1200 mm**Typical local abundance:****Vegetation:****Substrate:** Sandy soils.**Exposure:****Conservation****Conservation:** Coded 3KC- on national rare species list (Briggs & Leigh 1996), reported from Yengo NP but conservation status unknown. Morisset is the southern geographical limit.***Eucalyptus fibrosa***

MYRTACEAE

Red Ironbark

Life history**Growth form:** Tree to 35 m high with persistent 'ironbark' throughout.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, November–February.**Fruit/seed:** Woody capsule 6–12 mm long, retained for up to a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:** Resprouts from epicormic buds (Bell pers. comm.).**Interaction with other organisms:** Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC CT NWS CWS; Qld.**Distribution Sydney area:** Widespread.**Select locations:** CC: Macdonald Valley, Wyong, Windsor, Marsden Park, Belmore, St Marys, Flemington, Nortons Basin, Cabramatta, Milperra, Scotts Main Range, Oakdale, Broughton Pass. CT: Glen Davis, Kanimbla Valley.**Habitat****Habitat:** Crests and upper hillsides.**Altitude:** 0–600 m**Annual rainfall:** 700–1000 mm**Typical local abundance:** Frequent–dominant.**Vegetation:** Open-forest and woodland e.g. with *Eucalyptus tereticornis*, *E. moluccana*, *E. longifolia*, *E. globoidea*, *E. punctata*, *E. siderophloia*, *E. beyeriana*.

Substrate: Clayey to gravelly soils on Wianamatta Shale and Shoalhaven Group conglomerate shales and sandstones, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Conservation status unknown.

Eucalyptus globoidea

MYRTACEAE

White Stringybark

Life history

Growth form: Tree to 30 m high, with grey to red brown stringy bark persistent throughout the trunk and branches.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–September. Native bees, honeybees and flies probably the main pollinators with beetles and wasps probably also involved (P. Kubiak pers. comm.). Nectar flow erratic, however pollen yield is high (Elliot & Jones 1986).

Fruit/seed: Woody capsule 6–9 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds (Bell pers. comm.).

Interaction with other organisms: Browsed by Koala *Phascolarctos cinereus* but low palatability (Hawkes 1978).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST; Vic.

Distribution Sydney area: Widespread, mainly on Central Coast subdivision.

Select locations: CC: Cooranbong, Gosford, Bilpin, Avalon, Springwood, Hornsby, Cheltenham, Chatswood, Strathfield, Cabramatta, East Hills, Kurnell, Oakdale, Thirlmere, Dapto, Kangaroo Valley. CT: Hill Top, Berrima, Wingello.

Habitat

Habitat: On rises and ridges.

Altitude: 0–1000 m

Annual rainfall: 700–1400 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt open-forest; woodland e.g. with *Eucalyptus sieberi*, *E. cypellocarpa*, *E. blaxlandii*, *E. pilularis*, *Angophora costata*, *E. punctata*, *E. fibrosa*, *E. crebra*, *E. sideroxylon*, *Corymbia gummifera*.

Substrate: Clay loam on shale, sandy or alluvial soils on sandstones, medium nutrients.

Exposure: Full sun.

Conservation

Conservation: Probably adequately conserved.

Eucalyptus goniocalyx

MYRTACEAE

Bundy

Life history

Growth form: Tree to 15 m high; bark persistent fibrous-flaky, grey with whitish patches, smooth above, grey, shedding in short ribbons. Lignotuber present (Elliot & Jones 1986).

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, March–October. High yield of pollen and nectar (Elliot & Jones 1986).

Fruit/seed: Woody capsule 6–10 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Quick-growing (at Orange C. Pratten pers. comm.).

Fire response:

Interaction with other organisms: Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978).

Host-specific to round-lerp-forming psyllid *Glycaspis flavilabris* (Moore 1988).

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS; Vic., S.A.

Distribution Sydney area: Bathurst–Orange area.

Select locations: CT: Mullions Range, Ophir, Winburndale, Wallerawang, Glanmire, Cadia, Carcoar, Rockley, Jenolan Gorge, Bigga, Wombeyan Caves.

Habitat

Habitat: Dry sloping sites.

Altitude: 700–1000 m **Annual rainfall:** 600–1000 mm

Typical local abundance: Frequent.

Vegetation: Open grassy woodland e.g. with *Eucalyptus macrorhyncha*, *E. mannifera*, *E. melliodora*, *E. albens*, *E. bridgesiana*.

Substrate: Dry, shallow soils from shales, granites, metamorphics, low nutrients.

Exposure:

Conservation

Conservation: Not known.

Eucalyptus gregsoniana

MYRTACEAE

Wolgan Snow Gum

Life history

Growth form: Mallee to 5 m high or sometimes a small tree, with smooth white or grey bark shedding in ribbons.

Vegetative spread: No.

Longevity: Indefinite.

Primary juvenile period:

Flowers: White, May–December.

Fruit/seed: Woody capsule 6–8 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT ST.

Distribution Sydney area: Upper Blue Mountains.

Select locations: CT: Lithgow, Newnes SF, Bungleeboori, Newnes Junction, Mt Wilson, Bell.

Habitat

Habitat: Exposed hillsides.

Altitude: 800–1200 m **Annual rainfall:** 1000–1200 mm

Typical local abundance: Frequent–dominant.

Vegetation: Mallee heath e.g. with *Eucalyptus stricta*, *E. mannifera*, *Allocasuarina nana*, *Banksia ericifolia*, *B. spinulosa*.

Substrate: Sandy soils on sandstone, low nutrients, poorly-drained.

Exposure: Exposed sites, full sun.

Conservation

Conservation: Newnes Plateau is northern geographical limit, conservation status unknown.

Eucalyptus haemastoma

MYRTACEAE

Broad-leaved Scribbly Gum

Life history

Growth form: Tree to 15 m high, often stunted or mallee form; bark smooth with scribbles, white or grey, shedding in short ribbons. Intergrades with *E. racemosa* south of Port Jackson; these populations may have smaller fruit.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, may flower at any time. Probably pollinated by honeybees, native bees, flies, beetles and butterflies and other insects (P. Kubiak pers. comm.).

Fruit/seed: Woody capsule 6–9 mm diam., mature fruit retained for up to a year, before being shed.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Recruitment mainly after fire (D. Keith pers. comm.).

Fire response: Resprouts. Bark cracking and shedding, with epicormic shoots one month after high intensity fire (1/1994) at West Head (L.McD.). Secondary juvenile period less than 3.5 yrs (P. Kubiak pers. comm.).

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Host of larvae of White-stemmed Gum Moth *Chelepteryx collesi* (Hadlington & Johnston 1977), Scribble Moth *Ogmograptis scribula* (Jones & Elliot 1986). Host-specific to gall-forming psyllid/lerp insect *Glycaspis perthecata* (Moore 1988). Browsed by Koala *Phascolarctos cinereus* but not suitable for sustained feeding of this species alone; more palatable than *E. racemosa* (Hawkes 1978). Mud-covered termite runway up trunk of living tree and aerial nest of termite *Nasutitermes walkeri* (P. Kubiak pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: NC CC.

Distribution Sydney area: Coastal, Lake Macquarie to Royal NP.

Select locations: CC: Morisset, Peats Ridge, Woy Woy, West Head, Terrey Hills, Hornsby, Castle Hill, Pennant Hills, Manly, Mosman, Cooks River (1898), Kurnell, Loftus, Cronulla, Heathcote, Broughton Pass.

Habitat

Habitat: Ridges and plateaus.

Altitude: 0–200 m

Annual rainfall: 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt woodland e.g. with *Corymbia gummifera*, *Angophora costata*, *A. hispida*, *Banksia serrata*, with shrubby understorey.

Substrate: Sandy to sandy clay soil on sandstone, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Probably adequately conserved in major National Parks e.g. Brisbane Water, Ku-ring-gai, Royal NP.

Eucalyptus hypostomatica

MYRTACEAE

Life history

Growth form: Tree to 40 m high, with persistent grey fibrous-flaky bark throughout.
Vegetative spread: No.
Longevity: More than 100 years.
Primary juvenile period:
Flowers: October–November.
Fruit/seed: Woody capsule 3–5 mm long,
Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.
Fire response:
Interaction with other organisms:

Distribution

Status/origin: Native.
Botanical subregions: NC CC.
Distribution Sydney area: Sporadic.
Select locations: CC: Yengo NP, Lacys Creek, Mt Warrawolong, Burratorang Valley, Thirlmere, Wanganderry Lookout, Kangaroo Valley.

Habitat

Habitat: Sheltered hillslopes.
Altitude: 300–600 m **Annual rainfall:** 1000–1200 mm
Typical local abundance: Frequent.
Vegetation: Moist tall open-forest e.g. with *Eucalyptus deanei*, *Corymbia maculata*, *E. punctata*, *E. agglomerata* or open-forest e.g. with *Eucalyptus fibrosa*, *E. piperita*, *E. tereticornis*.
Substrate: Clay soils on shaly sandstones and siltstones, medium nutrients.
Exposure:

Conservation

Conservation: Uncommon and localised, coded 3RC- on national rare species list (Briggs & Leigh 1996). Kangaroo Valley is southern geographical limit. Conservation status unknown.

Eucalyptus imitans

MYRTACEAE

Life history

Growth form: Tree to 10 m high, with grey long-fibrous 'stringybark' persistent to the smallest branches.
Vegetative spread:
Longevity:
Primary juvenile period:
Flowers: Inflorescence more than 7-flowered.
Fruit/seed: Woody capsule 5–7 mm long.
Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.
Fire response:
Interaction with other organisms:

Distribution

Status/origin: Native.
Botanical subregions: CC SC.
Distribution Sydney area:
Select locations: CC: Tallowa Dam.

Habitat

Habitat: Plateau.
Altitude: 0–?400 m **Annual rainfall:** 1400 mm
Typical local abundance:
Vegetation: Woodland e.g. with *Eucalyptus racemosa*, *E. consideriana*, *Corymbia gummifera*.
Substrate: Shallow yellow rubbly soil.
Exposure:

Conservation

Conservation: Tallowa Dam is northern geographical limit, conservation status unknown.

Eucalyptus laevopinea

MYRTACEAE

Silver-top Stringybark

Life history

Growth form: Tree to 40 m high, with grey to red-brown stringy bark on the trunk and larger branches, smooth white to grey above shedding in short ribbons. Juvenile leaves pubescent with stellate hairs (Brooker & Kleinig 1983).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, June–August.

Fruit/seed: Woody capsule 6–10 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC NT CT NWS CWS; Qld.

Distribution Sydney area: Nullo Mountain area.

Select locations: CT: Mt Pomany, Nullo Mountain, Mt Kerry.

Habitat

Habitat: Plateau.

Altitude: 900–1300 m **Annual rainfall:** 900–1000 mm

Typical local abundance: Frequent.

Vegetation: Woodland e.g. with *Eucalyptus blaxlandii*, *E. viminalis*, *E. albens*, *Acacia parramattensis*.

Substrate: Red clay loam soil on basalt, high nutrients.

Exposure:

Conservation

Conservation: Rylstone is southern geographical limit, conservation status unknown.

Eucalyptus laophila

MYRTACEAE

Life history

Growth form: Mallee to 6 m high, with up to 6 trunks, smooth grey, grey-brown or copper bark shedding in ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: July.

Fruit/seed: Woody capsule 6–11 mm long, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Stems killed, resprouts from base.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Coricudgy to Newnes Plateau, replaced by *Eucalyptus stricta* on main Blue Mountains plateau to the south.

Select locations: CT: Mt Coricudgy, Currant Mountain Gap, Glow Worm Tunnel, Wolgan Gap, Ben Bullen, Bungleboori, Newnes Junction.

Habitat

Habitat: Between pagoda sandstone rock outcrops.

Altitude: 650–1100 m **Annual rainfall:** 700–1100 mm

Typical local abundance: Frequent–occasional.

Vegetation: Mallee shrubland and heath e.g. with *Eucalyptus rossii*, *E. sparsifolia*, *Callitris rhomboidea* *Allocasuarina distyla*, *Banksia ericifolia* (Pagoda Rock Complex of Benson & Keith 1990).

Substrate: Skeletal sandy soil often with quartz pebbles on Narrabeen pagoda sandstone outcrops, low nutrients.

Exposure: Exposed sites.

Conservation

Conservation: Local endemic species partly conserved in Wollemi NP.

Eucalyptus ligustrina

MYRTACEAE

Privet-leaved Stringybark

Life history

Growth form: Mallee 1–2 m high, or small tree with grey to red-brown stringy bark.

Vegetative spread: No.

Longevity: Indefinite.

Primary juvenile period:

Flowers: White, May–June.

Fruit/seed: Woody capsule 4–5 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC NT CT ST.

Distribution Sydney area: Illawarra Range, Upper Blue Mountains.

Select locations: CC: O'Hares Creek, Maddens Plains, Barren Grounds NR.

CT: Newnes SF, Mt Wilson, Wentworth Falls, Kings Tablelands Wanganderry Plateau.

Habitat

Habitat: Heath and woodland.

Altitude: 0–1000 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Frequent.

Vegetation: Woodland e.g. with *Corymia gummifera* (mallee form) *Eucalyptus racemosa*, *E. sieberi*, *E. stricta*, *E. piperita*, *E. radiata*, *E. sclerophylla*.

Substrate: Sandy soil on sandstone, acid granite, low nutrients.

Exposure: Exposed sites.

Conservation

Conservation: Uncommon (Keith 1994), conservation status unknown.

Eucalyptus longifolia**MYRTACEAE**

Woollybutt

Life history

Growth form: Tree generally 10–20 m high, with grey fibrous-flaky bark persistent on trunk and larger branches, smooth white or grey above.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, buds in threes, January–July.

Fruit/seed: Woody capsule 10–17 mm long

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Resistant to termite attack (Froggatt 1923). Host to Cerambycid longicorn beetle *Paroplitis australis* (Hawkeswood 1992b).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC.

Distribution Sydney area: Widespread on coast.

Select locations: CC: Morisset, Wyong, Kincumber, Castle Hill, St Marys, Parramatta, Newington, Auburn, Strathfield, Liverpool, East Hills, Ingleburn, Oakdale, Appin, Austinmer, Albion Park.

Habitat

Habitat: Woodland and forest.

Altitude: 0–500 m **Annual rainfall:** 800–1200 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt open-forest, woodland e.g. with *Eucalyptus moluccana*, *E. tereticornis*, *E. eugenioides*, *Angophora floribunda*, occasionally swamp woodland e.g. with *Eucalyptus robusta*, *Melaleuca ericifolia*, *Melaleuca styphelioides*, *M. linariifolia*.

Substrate: Clay soils from shale, alluvium, medium nutrients, sometimes poorly-drained. Budgong Sandstone, Berry Siltstone, and Coal Measures in Illawarra (M. Robinson pers. comm.).

Exposure:

Conservation

Conservation: Morisset is northern geographical limit; not conserved in Illawarra where threatened by housing and weeds (M. Robinson pers. comm.), conservation status elsewhere unknown.

Eucalyptus luehmanniana

MYRTACEAE

Yellow-top Ash

Life history

Growth form: Mallee to 6 m high with large lignotuber. Bark smooth, whitish, shedding in long ribbons.

Vegetative spread: Limited spread by lignotuber.

Longevity: Indefinite.

Primary juvenile period:

Flowers: White, August–November.

Fruit/seed: Woody capsule 7–10 mm diam., with 9 seeds. Fruits green for 1 year then brown and may remain for 2–3 seasons, until branch dies. Canopy-stored seedbank with low level of seed release in absence of fire.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Germination may take up to 5 weeks. No soil stored seed has been found (Davies 1987) 70% of emergent seedlings died in first three months. Field emergence of seedlings was 6–8% of laboratory germination. Moisture level may be a critical factor in establishment of seedlings: seedlings withered when soil was dry but rotted when in a locally wet patch; seedlings emerging in absence of fire grew more slowly than seedlings that established post-fire; seedlings establishing in the absence of fire are more susceptible to predation by invertebrates and burial under surface litter than those establishing in burnt areas, and few will survive more than 2–3 years (Tozer & Bradstock 1997).

Fire response: Stems killed, all canopy-stored seed released within 2 weeks, numerous stems resprouted from lignotubers within 3 months, flowering 2–4 years and fruit 5–6 years after fire. Seedling recruitment is low or not at all (Davies & Myerscough 1991). Seedlings seen 5–6 months following fire but not seen subsequently — possibly unable to compete with vigorous resprouting from numerous lignotubers (Bantry Bay, L.McD.). Seedlings up to 20 cm high observed 10 months after fire where there was little competition from resprouting lignotubers (Wallaroo Track, KCNP, L.McD. 1994). Recruitment of seedlings unlikely in absence of fire (Tozer & Bradstock 1997).

Interaction with other organisms: Ants are predators of seed (Davies & Myerscough 1991).

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Gosford–O'Hares Creek.

Select locations: CC: Mt Kariong, Berowra, Terrey Hills, Bantry Bay (Frenchs Forest), Spit, Bundeena, Waterfall, Darkes Forest, Stanwell Park.

Habitat

Habitat: South aspect rock platforms, slopes with southerly aspect.

Altitude: 0–400 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Frequent.

Vegetation: Mallee or wet heath e.g. with *Leptospermum trinervium*, *Angophora hispida*, *Banksia ericifolia*, *B. serrata*, *Hakea teretifolia*, *Dillwynia floribunda*, *Lepyrodia scariosa*, *Anisopogon avenaceus*, *Lepidosperma laterale* (Davies & Myerscough 1991).

Substrate: Shallow, sandy soils from Hawkesbury Sandstone, generally associated with seepage zones, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Coded 2RCa on national rare species list (Briggs & Leigh 1996). Restricted to range of less than 100 km in Sydney region, occurs in dense isolated populations within 20 km of coast (Davies & Myerscough 1991). Reported from Brisbane Water NP, Ku-ring-gai Chase NP, Garigal NP, and Royal NP.

Eucalyptus macarthurii

MYRTACEAE

Camden Woollybutt, Paddy's River Box

Life history

Growth form: Tree to 40 m high, with grey-brown shortly fibrous bark persistent on trunk and larger branches, smooth above, grey, shedding in short ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, January–February. Stamens ripen before stigmas, which become receptive for 2–3 days after the operculum detaches; the sticky pollen is avidly collected by birds and insects so there is little left after the first day of flower opening (Johnson & Burchett 1996).

Fruit/seed: Woody capsule 3–6 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms: Host plant of Cerambycid beetle *Tessaromma undatum* (Hawkeswood 1993). Oil valued for medicinal and industrial use (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Mainly Southern Highlands.

Select locations: CT: Krunge Bungle Range, Boyd Plateau, Mittagong, Berrima, Bowral, Moss Vale, Paddys River, Hanging Rock Swamp, Wingello, Marulan.

Habitat

Habitat: Broad cold flats.

Altitude: 700–1200 m

Annual rainfall: 1000–1400 mm

Typical local abundance: Frequent.

Vegetation: Woodland with grassy understorey e.g. with *Eucalyptus radiata*, *E. viminalis* (Marulan) or *E. radiata*, *E. blaxlandii*, *E. sieberi*, *E. stricta*, *E. pauciflora*, *E. dalrympleana* (Kanangra Boyd).

Substrate: Clay soils on alluvium and Wianamatta Shale, on granite in Kanangra Boyd, medium nutrients.

Exposure:

Conservation

Conservation: Coded 2RCi on national rare species list (Briggs & Leigh 1996), indicating it is rare with a restricted range less than 100 km and is inadequately reserved. Conserved in Kanangra Boyd NP but not adequately conserved on Southern Highlands where much of it has been cleared.

Eucalyptus macrorhyncha

MYRTACEAE

Red Stringbark

Life history

Growth form: Tree to 30 m high, with grey to red-brown stringy bark persistent on trunk and branches.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–March.

Fruit/seed: Woody capsule 7–12 mm diam., retained on plant for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seed dispersed by wind and gravity, no dormancy. Lignotubers developed in seedlings 9–12 weeks old and 9–16 cm high in greenhouse conditions (Kerr 1925).

Fire response: Regrows from surviving rootstocks, seedlings recorded less than 1 year after fire (Purdie 1977).

Interaction with other organisms: Foodplant of moth caterpillar *Marane melanospila* (Coupar & Coupar 1992). Association with mycorrhizal fungi. Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995).

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS; Vic., S.A.

Distribution Sydney area: Tablelands.

Select locations: CT: Hargraves, Mullion Range, Ophir, Bathurst, Winburndale, Orange, Glanmire, Marrangaroo, Hartley Vale, Trunkey, Tuena, Wombeyan Caves, Wingello.

Habitat

Habitat: Hillsides and rises.

Altitude: 600–1100 m

Annual rainfall: 600–900 mm

Typical local abundance: Dominant.

Vegetation: Open-forest or woodland e.g. with *Eucalyptus rossii*, *E. dives*, *E. mannifera*, *E. melliodora*, *E. polyanthemos*, *E. sieberi*, *E. radiata*, *E. bridgesiana*.

Substrate: Shallow often gravelly soils on slaty shales, sedimentary and volcanic rocks, low nutrients, well-drained.

Exposure:

Conservation

Conservation: Conservation status not known.

Eucalyptus maidenii

MYRTACEAE

Maiden's Gum

Life history

Growth form: Tree to 40 m high, with smooth white grey or yellow bark shedding in long ribbons.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, March–September.

Fruit/seed: Woody capsule 5–11 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: SC CT ST; Vic.

Distribution Sydney area: Wingello area.

Select locations: CT: Wingello, Barbers Creek.

Habitat: Valleys. Altitude: 600–700 m Annual rainfall: 1000–1100 mm Typical local abundance: Vegetation: Moist forest. Substrate: Medium nutrient soils. Exposure:	Habitat
Conservation: Rare, only known in area from collections made in 1898–1901.	Conservation

Eucalyptus mannifera

MYRTACEAE

Brittle Gum

Growth form: Tree to 20 m high, with smooth powdery bark, white grey or red, shedding in short ribbons, plates or flakes. Vegetative spread: No. Longevity: Radio-carbon dating of growth rings in ring-barked trees 450 years, and 120 years for regrowth (Williams & Brooker 1997). Primary juvenile period: Flowers: White, October–December. Fruit/seed: Woody capsule 4–7 mm diam., retained for up to a year. Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds require light for germination, optimum temperature 25°C (Langkamp 1987). Fire response: Resprouts from surviving rootstocks, seedlings recorded less than 1 year after fire (Purdie 1977). Interaction with other organisms: Moth larvae <i>Eupselia</i> species mine the leaves and pupate on leaf tips or twigs (Common 1990). Seed eaten by Crimson Rosella <i>Platycercus elegans</i> (Lepschi 1993).	Life history
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Status/origin: Native. Botanical subregions: CT ST SWS; Vic. Distribution Sydney area: Tablelands. Select locations: CT: Hargraves, Capertee, Mullion Creek, Orange, Portland, Bathurst, Newnes SF, Clarence, Mt Wilson, Tarana, Blackheath, Katoomba, Megalong Valley, Mt Werong, Wombeyan Caves, Fitzroy Falls, Paddys River, Penrose.	Distribution
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Habitat: Flats and lower hillsides. Altitude: 600–1200 m Annual rainfall: 600–1400 m Typical local abundance: Frequent. Vegetation: Woodland e.g. with <i>Eucalyptus rossii</i> , <i>E. rubida</i> , <i>E. macrorhyncha</i> , <i>E. blakelyi</i> , <i>E. piperita</i> . Substrate: Shallow rocky soils, clayey to sandy, from sandstones, metamorphics, low nutrients, sometimes poorly-drained. Exposure: Full sun.	Habitat
Conservation: Rylstone is northern geographical limit, probably adequately conserved e.g. Blue Mountains NP, Wollemi NP.	Conservation

Eucalyptus melliodora

MYRTACEAE

Yellow Box

Life history

Growth form: Tree to 30 m high, with fibrous-flaky bark persistent on lower trunk or trunk and larger branches, smooth above, grey, grey-brown or yellow, shedding in short ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period: 8–9 years (Goodacre).

Flowers: White or sometimes pink, September–February. Pollinated by insects, birds (Williams & Woinarski 1997). Stamens ripen before stigmas, which become receptive for 2–3 days after the operculum detaches; the sticky pollen is avidly collected by birds and insects so there is little left after the first day of flower opening (Johnson & Burchett 1996). Nectar flow does not begin until 1–2 days after stigma is receptive; inner anthers deposit clumps of pollen on undersurface of the stigma providing a secondary position for pollen presentation to insects; stamens wither after 12–16 days (House 1997). Prolific flowering every second year (Beardsell & Beardsell 1981). Irregular flowering mainly related to rainfall and other climatic conditions (Clemson 1985).

Fruit/seed: Woody capsule 4–7 mm diam., probably shed within a year. Seed shed in August (Davis 1968).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity. Dispersed in mud on cars (Wace 1977). Seeds require light for germination, optimum temperature 25°C (Langkamp 1987). Lignotubers developed in seedlings 9–12 weeks old and 9–16 cm high in greenhouse conditions; lignotuber may be retained in mature tree (Kerr 1925).

Fire response: Resprouts (Bell pers. comm.).

Interaction with other organisms: Produces abundant nectar (Johnson & Burchett 1996), once regarded as the state's best honey tree for quantity and quality of honey produced but its numbers have been reduced; does not provide beneficial pollen supplies for honey bees (Clemson 1985). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Seed eaten by Gang-gang Cockatoo *Callocephalon fimbriatus*, Crimson Rosella *Platycercus elegans* (Lepschi 1993). Host to larvae of moth, Gum Leaf Skeletoniser *Uraba lugens* (CSIRO 1996). Host plant of Cerambycid beetle *Tessaromma undatum* (Hawkeswood 1993). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Host-specific to round-oval-lerp-forming psyllid *Glycaspis neureta* (Moore 1988). Flowers visited by Fuscus Honeyeater *Lichenostomus penicillatus* New England Tablelands (Chan 1990). Important food source for Regent Honeyeaters.

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT ST NWS CWS SWS NWP SWP; Qld, Vic.

Distribution Sydney area: Tablelands.

Select locations: CC: Newnes, Yerranderie. CT: Nullo Mountain, Hill End, Capertee, Orange, Winburndale, Bathurst, Cadia, Tarana, Little Hartley, Kanimbla Valley, Trunkey Creek, Jenolan Caves, Abercrombie Caves, Wombeyan Caves.

Habitat

Habitat: Flats and hillslopes.

Altitude: 600–1000 m **Annual rainfall:** 600–1000 mm

Typical local abundance: Frequent.

Vegetation: Woodland with grassy understorey e.g. with *Eucalyptus goniocalyx*, *E. viminalis*, *E. albens*, *E. amplifolia*, *E. tereticornis*, *E. punctata*, *Angophora floribunda*.

Substrate: Sandy or alluvial soils. On shale, granite, basalt, medium nutrients.

Exposure:

Conservation

Conservation: Frequently occurs as remnant trees in cleared pastures, conservation status unknown.

Eucalyptus michaeliana

MYRTACEAE

Brittle Gum

Life history

Growth form: Tree to 30 m high, with white or grey or red-brown smooth bark shedding in plates or flakes.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, spring, August–October (Elliot & Jones 1986).

Fruit/seed: Woody capsule 4–5 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC NT; Qld.

Distribution Sydney area: Wollombi to St Albans.

Select locations: CC: Wollombi, Mt McQuoid, St Albans, Mogo Creek.

Habitat

Habitat: Steep slopes and gullies.

Altitude: 0–200 m

Annual rainfall: 900–1100 mm

Typical local abundance: Frequent–occasional.

Vegetation: Dry eucalypt woodland e.g. with *Eucalyptus punctata*, *E. crebra*, *E. amplifolia*, *Angophora bakeri*, *A. floribunda*; or in tall open-forest e.g. with *Eucalyptus deanei*, *E. saligna*, *Syncarpia glomulifera*.

Substrate: Sandy loam over sandstone, alluvium, low to medium nutrients.

Exposure: Sheltered.

Conservation

Conservation: Coded 3RCa on national rare species list (Briggs & Leigh 1996).

Recorded from Yengo NP.

Eucalyptus microcarpa

MYRTACEAE

Western Grey Box, Gum-topped Box

Life history

Growth form: Tree to 25 m high, with fibrous-flaky bark, grey with whitish patches, persistent on trunk and larger branches, smooth above, grey, shedding in short ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–August. Moderately good quantities of cream-coloured pollen gathered by bees; moderately reliable as honey producer (Clemson 1985).

Fruit/seed: Woody capsule 3–7 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT CC CWS SWS NWP SWP; Qld, Vic., S.A.

Distribution Sydney area: Sporadic.

Select locations: CC: Glen Davis. CT: Winburndale.

Habitat

Habitat: Woodland.

Altitude: 600–800 m **Annual rainfall:** 600–700 mm

Typical local abundance: Occasional.

Vegetation: Woodland with grassy understorey e.g. with *Eucalyptus goniocalyx*, *E. macrorhyncha*, *E. rossii*.

Substrate: Loamy soils, medium nutrients.

Exposure:

Conservation

Conservation: Localised occurrences at eastern edge of geographical range; reported from Winburndale NR. The related *Eucalyptus albens* is more common in the Capertee Valley.

Eucalyptus microcorys

MYRTACEAE

Tallowwood

Life history

Growth form: Tree to 40 m high, with red-brown or brown-black flaky-stringy persistent bark.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White–cream September–October, heavy flowering every 3–4 years (Elliot & Jones 1986).

Fruit/seed: Woody capsule 5–9 mm long. Mean number of seed per capsule 1.05, seed held in canopy up to one year (Van Loon 1966).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from above ground (Fox 1988).

Interaction with other organisms: Host plant of Cerambycid beetle *Adrium artifex* (Hawkeswood 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Reported as a moderately palatable species browsed by Koala *Phascolarctos cinereus* (Hawkes 1978).

Distribution

Status/origin: Native, frequently cultivated as a street tree.

Botanical subregions: CC NC: Qld.

Distribution Sydney area: Cooranbong

Select locations: CC: Olney State Forest, Morisset.

Habitat

Habitat: Wet forest; often on slopes

Altitude: 0–100 m **Annual rainfall:** 1100–1200 mm

Typical local abundance: Abundant

Vegetation: Rainforest margins, moist tall open-forest e.g. with *Eucalyptus pilularis*, *E. piperita*, *E. agglomerata*, *Corymbia gummifera*.

Substrate: Sandy loam over sandstone, medium nutrients.

Exposure:

Conservation

Conservation: Cooranbong is southern geographical limit. Conservation status unknown. May naturalise locally in bushland outside its natural range (e.g. at Kurnell), seeds may be dispersed in woodchip mulch used for gardens (M. Robinson pers. comm.).

Eucalyptus moluccana**MYRTACEAE**

Grey Box

Life history

Growth form: Tree to 25 m high, with fibrous–flaky bark, persistent on lower or full trunk. Intergrades with *Eucalyptus albens* in Upper Hunter Valley.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–March, June–July, variable.

Fruit/seed: Woody capsule 5–9 mm long, seed shed at maturity or soon after, March–September.

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank. Seedling recruitment not fire related. Vigorous recruitment taking place near adult trees in absence of stock grazing.

Fire response: Resprouts from epicormic buds, or basal sprouts.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). 642 species of invertebrate fauna recorded in the canopy (Williams & Woinarski 1997). Host-specific to round-lerp-forming psyllids *Glycaspis egroia* and *G. mannifera* (Moore 1988).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT ST NWS CWS; Qld.

Distribution Sydney area: Mainly western Sydney.

Select locations: CC: Sackville, Richmond, Pitt Town, Parramatta, Bankstown, Cabramatta, Narellan, Campbelltown, Picton.

Habitat

Habitat: Grassy woodland.

Altitude: 0–500 m **Annual rainfall:** 700–1200 mm

Typical local abundance: Dominant–frequent.

Vegetation: Eucalypt woodland e.g. with *Eucalyptus tereticornis*, *E. crebra*, *E. maculata* with grassy understorey (Cumberland Plain Woodland of Benson 1992).

Substrate: Soils from Wianamatta Shale or volcanic outcrops e.g. basalt, very fertile–fertile. Waterable permanently low, moisture supply intermittent, fresh.

Exposure: Light shade–full sun.

Conservation

Conservation: Important component of Cumberland Plain Woodland which is listed as an Endangered Ecological Community under the NSW *Threatened Species Conservation Act 1995*.

Eucalyptus moorei

MYRTACEAE

Life history

Growth form: Mallee to 6 m high, with smooth white, grey or green bark shedding in ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–July.

Fruit/seed: Woody capsule 3–4 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from lignotuber.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST.

Distribution Sydney area: Upper Blue Mountains.

Select locations: CT: Bungleboori, Newnes SF, Mt Wilson, Bell, Mt Victoria, Blackheath, Wentworth Falls, Leura, Narrow Neck.

Habitat

Habitat: Ridges, creekbanks.

Altitude: 900–1200 m

Annual rainfall: 1000–1200 mm

Typical local abundance: Frequent.

Vegetation: Mallee and heath e.g. with *Eucalyptus stricta*, *E. gregsoniana*, *Allocasuarina nana*, *Kunzea capitata*.

Substrate: Sandy soil over sandstone, low nutrients, poorly-drained.

Exposure:

Conservation

Conservation: Reported from Blue Mountains and Wollemi NP. Conservation status unknown.

Eucalyptus muelleriana

MYRTACEAE

Yellow Stringybark

Life history

Growth form: Tree to 40 m high, with grey to red-brown stringy bark persistent throughout.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Cream/white, December–February, October. Pollinated by bees, flies, beetles, moths; stamens wither after 12–14 days (House 1997), native bees, flies and beetles (Ireland & Griffin 1984).

Fruit/seed: Woody capsule 8–12 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Germination 1–3 weeks (A. Bofeldt pers. comm.).

Fire response: Resprouts from epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST; Vic.

Distribution Sydney area: Mainly Illawarra escarpment.

Select locations: CC: Mt Kembla, Macquarie Pass, Saddleback Mountain, Budgong. CT: Mt Werong, Bindook.

Habitat

Habitat: Lower slopes.

Altitude: 0–800 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Moist open-forest e.g. with *Eucalyptus quadrangulata*, *Syncarpia glomulifera* (Macquarie Pass), or *Eucalyptus punctata*, *E. cypellocarpa*, *E. viminalis* (Mt Werong).

Substrate: Shaley soils, low nutrient. Coal Measures, Quaternary tallus, Cambewarra Latite, Budgong Sandstone in Illawarra (A. Bofeldt pers. comm.).

Exposure: Full sun.

Conservation

Conservation: Mt Kembla is northern geographical limit. Conservation status unknown.

Eucalyptus multicaulis**MYRTACEAE**

Whipstick Ash

Life history

Growth form: Mallee to 8 m high, with smooth white or grey bark shedding in long ribbons.

Vegetative spread: No.

Longevity: Indefinite.

Primary juvenile period:

Flowers: Creamy white, September–November.

Fruit/seed: Woody capsule 7–9 mm long, retained for over a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism, soil-stored seedbank.

Fire response: Stems killed, resprouts from lignotuber.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC CT ST.

Distribution Sydney area: Sporadic.

Select locations: CC: Kariong, Culoul Range, Killcare, Kurrajong Heights, Woodford, Turrumurra, Holsworthy Heathcote, Wedderburn. CT: Coricudgy.

Habitat

Habitat: Rocky outcrops.

Altitude: 0–1000 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Frequent.

Vegetation: Localised occurrences in mallee shrubland e.g. with *Eucalyptus laophila*, *E. bensonii*, *E. stricta*, *Corymbia gummifera*, *E. consideniana*, *E. piperita*, *E. sparsifolia*.

Substrate: Shallow sandy soils over sandstone, low nutrients, well-drained.

Exposure:

Conservation

Conservation: Northern geographical limit is near Coricudgy. Reported from Blue Mountains NP, Wollemi NP, Brisbane Water NP, Boudi NP.

Eucalyptus nortonii

MYRTACEAE

Large-flowered Bundy

Life history

Growth form: Tree to 15 m high, with fibrous-flaky bark persistent on trunk and branches, smooth above, grey, shedding in short ribbons.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, August–October.

Fruit/seed: Woody capsule 7–12 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS; Vic.

Distribution Sydney area: Orange area.

Select locations: CT: Borenore, Orange, Canobolas, Hill End.

Habitat

Habitat: Rocky sites.

Altitude: 750–1200 m **Annual rainfall:** 700–1000 mm

Typical local abundance: Frequent.

Vegetation: Open woodland.

Substrate: Dry shallow soils on quartzites, low nutrients.

Exposure:

Conservation

Conservation: Conservation status unknown.

Eucalyptus notabilis

MYRTACEAE

Mountain Mahogany

Life history

Growth form: Tree generally 10–20 m high, sometimes mallee-like, with grey to red-brown stringy bark persistent on trunk and branches. Intergrades with *E. resinifera* from Colo Heights to Dural.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, January.

Fruit/seed: Woody capsule 6–10 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT; Qld.

Distribution Sydney area: Mainly lower Blue Mountains.

Select locations: CC: Mt Kindarun, Lower Portland, Bilpin, Kurrajong Heights, Berowra Springwood, Glenbrook, Orangeville, Thirlmere, Wilton, Bargo.

Habitat

Habitat: Ridge-tops with shale capping.

Altitude: 0–500 m **Annual rainfall:** 800–1000 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt open-forest e.g. with *Eucalyptus globoidea*, *Angophora costata*, *Eucalyptus eximia*, *E. pilularis*, *E. paniculata*.

Substrate: Shaley soil over sandstone, medium nutrients, well-drained.

Exposure:

Conservation

Conservation: Bargo is southern geographical limit. Conservation status unknown.

Eucalyptus obliqua

MYRTACEAE

Messmate

Life history

Growth form: Tree usually to 50 m high, with grey–red–brown shortly fibrous to stringy bark persistent to smaller branches, smooth above, white to grey, shedding in ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December–March.

Fruit/seed: Woody capsule 6–11 mm long. Seed weight 1.14 mg (Cremer 1977). Seed held on tree for 2 years (Johnson & Burchett 1996).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds released en masse following fire (Andersen 1988). Average seed dispersal 23.9 m from parent plant when released from a height of 40 m in 10 km/h wind (Cremer 1977). Seeds require light for germination, optimum temperature 16–20°C (Langkamp 1987). Lignotubers developed in seedlings 9–12 weeks old and 9–16 cm high in greenhouse conditions (Kerr 1925). Reduction in overstorey competition, by e.g. treefall, is associated with release of previously suppressed lignotuberous growth (Bell & Williams 1997).

Fire response: Resprouts from epicormic buds. Secondary juvenile period 2 years in Victoria (Wark et al. 1987).

Interaction with other organisms: Foodplant of moth caterpillars *Chenuala heliaspis* (pupation occurs amongst the foliage), *Heliocausia hemiteles* and *Mnesampela privata* (Coupar & Coupar 1992). Host plant of Cerambycid beetle *Phlyctaenodes pustulosus* (Hawkeswood 1993). Ants are predators of seed (Andersen 1988). Association with mycorrhizal fungi. Browsed by Koala *Phascolarctos cinereus*, moderate palatability (Hawkes 1978). Hollows provide arboreal mammal habitat (Kavanagh 1984).

Distribution

Status/origin: Native.

Botanical subregions: SC NT CT ST; Qld, Vic., Tas., S.A.

Distribution Sydney area: Southern Highlands.

Select locations: CT: Mt Werong, Bundanoon, Penrose, Wingello, Belmore Falls.

Habitat

Habitat: Plateaus and hillslopes.

Altitude: 600–1200 m **Annual rainfall:** 1200 mm

Typical local abundance: Frequent–dominant.

Vegetation: Moist eucalypt forest e.g. with *Eucalyptus piperita*, *E. fastigata*, *E. radiata*.

Substrate: Deep soil e.g. on basalt, shale, granite, medium nutrients.

Exposure:

Conservation

Conservation: Conservation status unknown.

Eucalyptus oblonga

MYRTACEAE

Stringybark

Life history

Growth form: Small tree generally 5–15 m high, with grey–red–brown stringybark persistent on trunk and larger branches or all branches. Intergrades with *Eucalyptus sparsifolia* and *Eucalyptus capitellata*. Distinguished from *E. sparsifolia* by the ovate juvenile leaves, broad lanceolate adult leaves and ovoid acute buds (Johnson & Hill 1990).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–April.

Fruit/seed: Woody capsule 6–9 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Host-specific to flat-lerp-forming psyllid *Glycaspis phreatia* (Moore 1988).

Distribution

Status/origin: Native.

Botanical subregions: CC SC.

Distribution Sydney area: Mainly Ourimbah–Ku-ring-gai area. Other small occurrences are in Royal NP, and on the edges of the Woronora Plateau and in the Kedumba Valley (Johnson & Hill 1990).

Select locations: CC: Kulnura, Wyong, Calga, Cowan, Duffys Forest, Hornsby, Wahroonga, Belrose, Forestville, Manly Dam, Picnic Point, Woronora, Lucas Heights, Waterfall, Megalong Valley.

Habitat

Habitat: Ridges and upper slopes.

Altitude: 0–400 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Dry eucalypt woodland e.g. with *Corymbia gummifera*, *E. haemastoma*, *E. punctata*, *E. camfieldii*, *E. umbra*, *E. piperita*, *E. capitellata*.

Substrate: Sandy soils on sandstone, laterite, low nutrients.

Exposure:

Conservation

Conservation: Not considered to be at risk (Johnson & Hill 1990).

Eucalyptus obstans

MYRTACEAE

Port Jackson Mallee

Life history

Growth form: Mallee to 4 m high.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period: More than 15 years (D. Keith pers. comm.).

Flowers: White, June–August.

Fruit/seed: Woody capsule 8–12 mm long, retained on plant for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Stems killed, resprouts from lignotuber within 4 weeks of high intensity fire, seeds released after fire (Royal NP February 94). Secondary juvenile period 4 years (D. Keith pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC ST.

Distribution Sydney area: Ku-ring-gai Chase to Jarvis Bay.

Select locations: CC: Berowra, Beacon Hill, North Head, The Spit, Rose Bay, Bellevue Hill, Canterbury (1886), Maroubra, Long Bay, Loftus, Bundeena, Wattamolla, Garie, Stanwell Tops.

Habitat

Habitat: Plateaus and upper slopes.

Altitude: 0–200 m **Annual rainfall:** 1100–1400 mm

Typical local abundance: Frequent.

Vegetation: Mallee heath e.g. with *Corymbia gummifera*, *Leptospermum trinervium*, *Banksia ericifolia*, *Allocasuarina distyla*.

Substrate: Shallow sandy soil on sandstone, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Ku-ring-gai Chase NP is northern geographical limit, conserved in Royal NP but status elsewhere unknown. Very rare in Eastern suburbs where it was once common.

Eucalyptus oreades**MYRTACEAE**

Blue Mountain Ash

Life history

Growth form: Tree 20–30 m high, with smooth bark shedding in long ribbons. Does not coppice after cutting. No lignotuber (Glasby et al. 1988).

Vegetative spread: No.

Longevity: 100–150 years.

Primary juvenile period: 10–25 years for suppressed-growth trees, 25 yrs or more for tall trees (Glasby et al. 1988).

Flowers: White, January–February.

Fruit/seed: Woody capsule 6–10 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. recruitment takes place in open areas with or without fire, but is most extensive after fire. Early growth of seedlings is rapid; dominant trees grow quickly and are taller than other eucalypts, but take 25 yrs or more to develop canopy-stored seedbank and basal skirt of bark to protect them from ground-fires; suppressed trees produce seed early enabling recruitment if fires occur with interval 10–25 years (Glasby et al. 1988).

Fire response: One of the few eucalypts very sensitive to fire. Feeble resprouting from epicormic buds is uniform over the whole stem but damaged plants die and recruitment is from canopy-stored seed (Glasby et al. 1988).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC NT CT; Qld.

Distribution Sydney area: Mainly Upper Blue Mountains.

Select locations: CT: Mt Coricudgy, Katoomba, Newnes SF, Clarence, Mt Wilson, Hassans Walls, Blackheath, Leura, Kings Tableland, Yerrinbool, Mittagong.

Habitat

Habitat: Steep slopes, ridges.

Altitude: 600–1200 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Moist eucalypt open-forest e.g. with *Eucalyptus sieberi*, *E. radiata* (Blue Mountains Sandstone Plateau Forest of Keith & Benson 1988, Newnes Plateau Woodland of Benson & Keith 1990).

Substrate: Skeletal sandy soils on sandstone, low nutrients, well-drained.

Exposure: Sheltered, south and east aspect (Glasby et al. 1988).

Conservation

Conservation: Probably adequately conserved in Blue Mountains though status of outlier population at Mittagong (southern geographical limit) is unknown.

Eucalyptus ovata

MYRTACEAE

Swamp Gum

Life history

Growth form: Tree to 30 m high, with shortly fibrous bark persistent on lower trunk, smooth above, white, pink or yellow, shedding in long broad ribbons.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, June–September.

Fruit/seed: Woody capsule 4–7 mm diam. Seed weight 0.45 mg (Withers 1978).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. *Allocasuarina littoralis* litter may inhibit germination (Withers 1978).

Fire response: Resprouts from lignotubers and epicormic buds in Victoria (Wark 1997).

Interaction with other organisms: Foodplant of moth caterpillars *Melanodes anthracitaria* and *Sorama bicolor* (Coupar & Coupar 1992). Host to larvae of moth, Gum Leaf Skeletoniser *Uraba lugens* (CSIRO 1996). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Ants harvest seeds (Withers 1978). Sugar Gliders eat nectar (Kavanagh 1984).

Distribution

Status/origin: Native.

Botanical subregions: SC CT ST; Vic., Tas., S.A.

Distribution Sydney area: Mainly Southern Highlands.

Select locations: CT: Jenolan Caves, Hampton, Colong Swamps, Hill Top, Mittagong, Crookwell, Bowral, Wingecarribee Swamp, Bundanoon, Fitzroy Falls, Wingello, Marulan.

Habitat

Habitat: Valleys or poorly-drained flats.

Altitude: 500–1000 m **Annual rainfall:** 900–1600 mm

Typical local abundance: Frequent.

Vegetation: Woodland e.g. with *Eucalyptus aggregata*, *E. pauciflora*, *E. globoidea*, *E. agglomerata*.

Substrate: Permanently damp sites in alluvium from shale or sandstone, medium nutrients, poorly-drained.

Exposure:

Conservation

Conservation: Vulnerable, swamps and moist sites are vulnerable to disturbance and much of this habitat has been cleared.

Eucalyptus paniculata* subsp. *paniculata

MYRTACEAE

Grey Ironbark

Life history

Growth form: Tree to 30 m high, with grey-black 'ironbark' throughout trunk and branches.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: May–November, peak June–July. Probably pollinated by honeybees, native bees and flies and other insects (P. Kubiak pers. comm.).

Fruit/seed: Woody capsule 6–9 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds and with basal sprouts. Seedlings recruited after high-intensity fire at Narrabeen 1994, growing to 20 cm in 4 months.

Interaction with other organisms: Host plant of Cerambycid beetles *Acyrusa ciliata*, *Bethelium signiferum* (Hawkeswood 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Host for *Dendrobium aemulum*.

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT CWS.

Distribution Sydney area: Coastal areas.

Select locations: CC: Wyong, Colo Heights, Gosford, Kurrajong, Lion Island, Hornsby, Chatswood, Dundas, Parramatta, Hunters Hill, Hurstville, Heathcote, Appin, Wollongong, Moss Vale, Budgong. CT: Wingello.

Habitat

Habitat: Moist forest.

Altitude: 0–600 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Moist eucalypt forest e.g. with *Eucalyptus pilularis*, *E. resinifera*, *Angophora costata*, *Eucalyptus globoidea*; Turpentine-Ironbark forest of Benson and Howell (1990); or drier forest e.g. with *Eucalyptus crebra*; coastal forest e.g. with *Eucalyptus botryoides*.

Substrate: Deeper soils on Wianamatta Shale, quartzite, alluvial flats. Volcanic intrusion, dolerite (at West Head L.McD.), medium nutrients, well-drained. Quaternary Talus, Budgong Sandstone in Illawarra (M. Robinson pers. comm.).

Exposure:

Conservation

Conservation: Much of this habitat has been cleared, poorly conserved in Illawarra (M. Robinson pers. comm.). Conservation status unknown.

Eucalyptus parramattensis* subsp. *parramattensis**MYRTACEAE**

Parramatta Red Gum

Life history

Growth form: Small tree to 15 m high, with smooth bark shedding in large plates or flakes.

Leaves with strong aromatic scent when crushed. 'Calargroo' of Caley (1807).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, November–January.

Fruit/seed: Woody capsule less than 7 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978).

Distribution

Status/origin: Native.

Botanical subregions: CC CWS.

Distribution Sydney area: Mainly western Sydney.

Select locations: CC: Howes Valley, Wheeny Creek, Kanwal, Agnes Banks, Londonderry, Glenbrook, Duck River, Chester Hill, Bankstown, East Hills, Douglas Park, Thirlmere, Hill Top.

Habitat

Habitat: Low-lying, periodically wet sites.

Altitude: 0–500 m **Annual rainfall:** 800–1000 mm

Typical local abundance: Frequent.

Vegetation: Woodland e.g. with *Eucalyptus longifolia*, *E. amplifolia*, *E. sclerophylla*, *E. tereticornis*, *Angophora bakeri*.

Substrate: Sandy soils, on Tertiary alluvium, shale, sandstone, low nutrients, poorly-drained.

Exposure:

Conservation

Conservation: Hill Top is southern geographical limit, conservation status unknown.

Eucalyptus pauciflora

MYRTACEAE

White Sally, Snow Gum

Life history

Growth form: Tree 10–20 m high, white, grey or yellow, bark smooth with scribbles, shedding in ribbons.

Vegetative spread: No.

Longevity: 250–400 years from tree-ring analysis (Williams & Brooker 1997).

Primary juvenile period:

Flowers: White, December–January.

Fruit/seed: Woody capsule 6–10 mm long, retained for more than a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds require cool moist conditions for germination (Johnson & Burchett 1996). Cold stratification required to initiate germination of seed from some high altitude populations (Beardsell & Mullett 1984). Seedlings protected from severe climatic events by grass tussocks, but not subject to their competition, grow taller among tussock grassland and shrub-dominated understoreys than in cleared areas or natural gaps (Kirkpatrick 1997).

Fire response: Resprouts from epicormic buds and lignotubers (Strasser et al. 1996).

Seedlings resprout from lignotubers following fire (Noble 1984). Burning / grazing combination can substantially increase mortality of this plant (Gill 1997).

Interaction with other organisms: Foodplant of moth caterpillar *Chenuala heliaspis*, pupation occurs amongst the foliage (Coupar & Coupar 1992). Good source of nectar and provides good supplies of pollen for bees (Clemson 1985). Association with mycorrhizal fungi. Host of Scribble Moth *Ogmograptis scribula* (Jones & Elliot 1986). Host to fungus *Aurantioporus pulcherrimus* (May & Simpson 1997).

Distribution

Status/origin: Native.

Botanical subregions: SC NT CT ST; Qld, Vic, Tas.

Distribution Sydney area: Tablelands.

Select locations: CT: Nullo Mountain, Ilford, Mullion Range, Lidsdale, Newnes SF, Bathurst, Kirkconnel, Milthorpe, Rydal, Hartley Vale, Oberon, Rockley, Mt Werong, Wombeyan Caves, Mittagong, Wingello.

Habitat

Habitat: Flat, cold sites, near creeks.

Altitude: 700–1200 m **Annual rainfall:** 700–1000 mm

Typical local abundance: Frequent.

Vegetation: Grassy and shrubby woodland e.g. with *Eucalyptus radiata*, *E. stricta*, *E. stellulata*; or open-forest e.g. with *Eucalyptus dalrympleana*, *E. mannifera*, *E. rubida*, *E. viminalis*.

Substrate: Clayey to sandy soil on sandstone, shale, granite, basalt, alluvium, low to high nutrients.

Exposure: Full sun, tolerates heavy frosts.

Conservation

Conservation: Widespread but often as remnant in cleared areas. Conservation status unknown.

Eucalyptus pilularis

MYRTACEAE

Blackbutt

Life history

Growth form: Tree generally to 30 m high with persistent bark. Lignotuber present in dry forest habitat but not in wet forest (Williams & Woinarski 1997).

Vegetative spread: No.

Longevity: More than 200 years (Mackowski 1984).

Primary juvenile period:

Flowers: White, July–January, variable. Pollinated by gliders (House 1997).

Fruit/seed: Woody capsule 6–11 mm long. Seed 2 mm long, weight 2.1 mg (Drake 1981), mean number of viable seeds per capsule 2.61 (Floyd 1962). Seed shed at maturity or soon after, May–November.

Dispersal, establishment & growth: Diaspore: seed, no special dispersal morphology (Westoby et al. 1990). Seedfall correlated with dry periods, dispersed to 8 m from base of tree (Floyd 1962). Average seed dispersal 21.1 m when seed released at height of 40 m in wind 10 km/h (Cremer 1977). Seeds dispersed by ants *Rhytidoponera metallica* (Drake 1981). No soil-stored seedbank.

Fire response: Resprouts from epicormic buds (Fox 1988) after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Interaction with other organisms: Leaves browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Leaves attacked by larvae of Blackbutt Leaf Miner *Acrocercops laciniella*, mines between leaf surfaces (Hadlington & Johnston 1977). Host-specific to gall-forming psyllid/lerp insect *Glycaspis cyta* and round-lerp-forming *Glycaspis seriata* (Moore 1988). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Aerial nest of termite *Nasutitermes walkeri* on trunk of living tree. Yellow-bellied Glider, Sugar Glider and Feathertail Gliders inhabit large hollows formed in trees aged more than 200 yrs (Mackowski 1984).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT; Qld.

Distribution Sydney area: Widespread.

Select locations: CC: Morisset, Gosford, Wisemans Ferry, Galston, Cheltenham, Gladesville, Ashfield, Kogarah, Homebush, The Oaks, Audley, Broughton Pass, Berry.

Habitat

Habitat: Ridges and slopes.

Altitude: 0–500 m

Annual rainfall: above 1000 mm

Typical local abundance: Dominant–frequent.

Vegetation: Moist tall open-forest or grassy coastal forest e.g. with *Angophora costata*–*Eucalyptus piperita* on sandstone soils; *E. saligna*–*E. paniculata* on shaley soils.

Substrate: Sandy soils from sandstone or shale, low to medium nutrients. Watertable permanently low, moisture supply intermittent. Budgong Sandstone, Coal Measures in Illawarra (M. Robinson pers. comm.).

Exposure: Light shade.

Conservation

Conservation: Conserved in Ku-ring-gai Chase NP, Royal NP, but inadequately conserved in communities on better soils e.g. Blue Gum High Forest on North Shore. Poorly conserved in coastal Illawarra (M. Robinson pers. comm.).

Eucalyptus piperita

MYRTACEAE

Sydney Peppermint

Life history

Growth form: Tree generally 10–20 m high with persistent, shortly fibrous bark on trunk and lower branches. Leaves with strong peppermint scent when crushed.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December–January. Probably pollinated by honeybees, native bees, butterflies and other insects (P. Kubiak pers. comm.), gliders (House 1997). Jewel Beetle *Stigmodera variabilis* collected from the flowers (Hawkeswood 1978).

Fruit/seed: Woody capsule 6–8 mm long, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds and lignotuber.

Interaction with other organisms: Host-specific to gall-forming psyllid/lerp insect *Glycaspis cyrtoma* and flat-lerp-forming psyllid *G. planaria* (Moore 1988). May be an important source of nectar for insects in mid-summer; provides habitat for mud-covered termite runway up trunk of living tree, aerial nest of termite *Nasutitermes walkeri*; bracket fungus *Piptoporus portentosus* (Dec.) on living trunk; large bag shelters of caterpillars? *Ochrogaster* sp. ?Notodontidae (April & July) on trunk (P. Kubiak pers. comm.).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST.

Distribution Sydney area: Widespread.

Select locations: CC: Gosford, Cowan, Cheltenham, Gladesville, Bellevue Hill, Sutherland, Wattamolla, Broughton Pass, Thirlmere Lakes. CT: Kandos Weir, Charbon, Gaspers Mountain, Newnes SF, Mt Wilson, Mt Victoria, Blackheath, Katoomba, Lawson, Tonalli River, Wanganderry Plateau, Wombeyan Caves.

Habitat

Habitat: Hillsides and gullies.

Altitude: 0–1000 m

Annual rainfall: 800–1600 mm

Typical local abundance: Frequent–dominant.

Vegetation: Eucalypt forest e.g. with *Eucalyptus sieberi*, *E. oreades*, *E. radiata*, *Corymbia gummifera*, *Angophora costata*; and woodland e.g. with *Eucalyptus eximia*, *E. sclerophylla*, *E. sparsifolia*, *E. punctata*, *Angophora bakeri*, *Eucalyptus considemiana* with shrubby understorey.

Substrate: Sandy soil on sandstone, low to medium nutrients, well-drained.

Exposure: Light shade.

Conservation

Conservation: Widespread and adequately conserved e.g. Blue Mountains, Wollemi, Royal, Ku-ring-gai Chase National Parks.

Eucalyptus polyanthemus* subsp. *polyanthemus

MYRTACEAE

Red Box

Life history

Growth form: Small tree generally 10–20 m high, with mostly smooth bark, shedding in large plates or scales, sometimes irregularly persistent on trunk. Tree often mature in the intermediate (ovate) leaf phase (Brooker & Kleinig 1983).

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, September–November. Inner anthers deposit clumps of pollen on undersurface of the stigma providing a secondary position for pollen presentation to insects (House 1997).

Fruit/seed: Woody capsule 4–7 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Lignotubers developed in seedlings 9–12 weeks old and 9–16 cm high in greenhouse conditions (Kerr 1925).

Fire response:

Interaction with other organisms: Foodplant of moth caterpillars *Mnesampela privata* and *Trichiocercus sparshalli* (Coupar & Coupar 1992). Host plant of Cerambycid beetle *Tessaromma undatum* (Hawkeswood 1993).

Distribution

Status/origin: Native.

Botanical subregions: CT ST CWS SWS.

Distribution Sydney area: Bathurst–Orange area.

Select locations: CT: Hargraves, Mullion Creek, Hill End, Capertee, Glanmire, Trunkey, Tuena, Abercrombie.

Habitat

Habitat: Stony slopes.

Altitude: 600–1000 m **Annual rainfall:** 600–1000 mm

Typical local abundance: Frequent.

Vegetation: Grassy or shrubby woodland e.g. with *Eucalyptus macrorhyncha*, *E. goniocalyx*, *E. blakelyi*.

Substrate: Skeletal soils from shale, granite, slate, low nutrients.

Exposure:

Conservation

Conservation: Conservation status unknown.

Eucalyptus praecox

MYRTACEAE

Brittle Gum

Life history

Growth form: Tree to 15 m high, with smooth, powdery, white or grey bark shedding in short ribbons or flakes. Related to *E. mannifera* subsp. *mannifera* but with orbicular juvenile leaves and broader adult leaves (Brooker & Kleinig 1983).

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: June–November.

Fruit/seed: Woody capsule 5–6 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT ST.

Distribution Sydney area: Rylstone to Oberon.

Select locations: CT: Nullo Mountain, Ilford, Mt Vincent, Capertee, Cullen Bullen, O'Connell, Oberon.

Habitat

Habitat: Hillsides and flats.

Altitude: 700–1000 m **Annual rainfall:** 600–900 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt woodland e.g. with *Eucalyptus melliodora*, *E. macrorhycha*, *E. tenella*, *E. rubida*, *E. dives*, *E. pauciflora*.

Substrate: Shallow sandy soil on quartzite, sandy alluvium, occasionally basalt, medium to low nutrients.

Exposure:

Conservation

Conservation: Restricted to the Capertee and Upper Cudgegong River districts (Brooker & Kleinig 1983). Conservation status unknown.

Eucalyptus prominula

MYRTACEAE

Stringybark

Life history

Growth form: Tree to 25 m high, with persistent grey to red brown stringy bark.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Inflorescence 7–11-flowered or more.

Fruit/seed: Woody capsule 7–9 mm diam., retained for some time.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Bucketty to Hunter Range.

Select locations: CC: Howes Mountain, Howes Valley, Laguna, Kulnura, Old Great North Road.

Habitat

Habitat: Steep dry slopes, ridges.

Altitude: 0–300 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt open-forest e.g. with *Corymbia gummifera*, *Eucalyptus eximia*, *E. punctata*, *E. beyeriana*, *E. piperita*, *Angophora floribunda*, *Eucalyptus fibrosa*, *Angophora costata*.

Substrate: Shallow sandy soil on sandstone, low nutrients, well-drained.

Exposure:

Conservation

Conservation: Coded 2KC- on national rare species list (Briggs & Leigh 1996), confined to Bucketty district and west along Hunter Range, reported for Yengo NP.

Eucalyptus propinqua**MYRTACEAE**

Small-fruited Grey Gum

Life history

Growth form: Tree to 40 m high, with smooth, patchy matt grey or grey-brown bark shedding in large plates or flakes.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December–April.

Fruit/seed: Woody capsule 3–6 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seedlings with lignotubers (Brooker & Kleinig 1983).

Fire response:

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Host plant for larvae of Jewel Beetle *Astraeus mastersi* (Turner & Hawkeswood 1996).

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld.

Distribution Sydney area: North from Wyong.

Select locations: CC: Yarramalong, Wyong, Palmdale.

Habitat

Habitat: Ridges.

Altitude: 0–300 m **Annual rainfall:** 1200 mm

Typical local abundance: Frequent.

Vegetation: Open-forest e.g. with *Angophora floribunda*, *Eucalyptus pilularis*.

Substrate: Sandy clay soils on sandstone, low to medium nutrients.

Exposure:

Conservation

Conservation: Wyong is the southern geographical limit, conservation status unknown.

Eucalyptus pulverulenta

MYRTACEAE

Silver-leaved Gum

Life history

Growth form: Mallee generally to 2.5 m high, with smooth grey or bronze bark shedding in long ribbons. Young stems very glaucous (Brooker & Kleinig 1983). Juvenile leaves persistent, may be reproductively mature with a completely 'juvenile' crown (Bell & Williams 1997).

Vegetative spread:

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, May–December. Self-sterile (Johnson & Burchett 1996).

Fruit/seed: Woody capsule 6–8 mm diam., retained for some time.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from lignotuber (Elliot & Jones 1986) and epicormic buds (R. Lembit pers. comm.).

Interaction with other organisms: Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: CT ST.

Distribution Sydney area: Hartley, Coxs River.

Select locations: CT: Georges Plain, Perthville, Lawsons Sugarloaf, Mt Blaxland, Lowther Creek.

Habitat

Habitat: Rocky hillside.

Altitude: 700–850 m

Annual rainfall: 800 mm

Typical local abundance: Occasional–frequent.

Vegetation: As understorey species in grassy woodland e.g. with *Eucalyptus macrorhyncha*, *E. rossii*, *E. polyanthemos*, *E. goniocalyx*, *E. sieberi*.

Substrate: Sandy soil on aplite, shale, rhyolite (at Hartley and Lowther, R. Lembit pers. comm.), low nutrients.

Exposure: Exposed, full sun.

Conservation

Conservation: Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 3V on national rare species list (Briggs & Leigh 1996). Now apparently extinct at Georges Plains–Perthville (last collected 1918).

Eucalyptus punctata

MYRTACEAE

Grey Gum

Life history

Growth form: Tree to 35 m high with smooth patchy white, grey, grey-brown salmon or orange bark shedding in large flakes. Populations in lower Hunter Valley are intermediate between *E. punctata* and *E. canaliculata*.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February.

Fruit/seed: Woody capsule 5–12 mm long, retained on plant for most of the year as canopy-stored seedbank.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity. No dormancy, germinates without treatment. Seedlings without lignotubers (Brooker & Kleinig 1983) however, lignotubers reported in nursery seedlings 12 cm high (Kerr 1925).

Fire response: Resprouts from branches and base after high intensity fire (Bell pers. comm., P. Kubiak pers. comm.).

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Staple browse species of Koala *Phascolarctos cinereus* (Hawkes 1978). Host-specific to round-lep-forming psyllid *Glycaspis imponens* (Moore 1988). Abandoned mud-covered runways up trunk of living tree, probably termite *Nasutitermes walkeri* (P. Kubiak pers. comm.).

Distribution**Status/origin:** Native.**Botanical subregions:** NC CC SC CT ST CWS.**Distribution Sydney area:** Widespread.**Select locations:** CC: Mt Kindarun, Wisemans Ferry, Richmond, Maroota, Gosford, Hornsby, Castlecove, Como, East Hills, Blaxland, Burragorang Valley, Bomaderry.

CT: Nullo Mountain, Capertee, Clarence, Hilltop, Mittagong, Tallong.

Habitat**Habitat:** Hillside and ridges.**Altitude:** 0–1200 m**Annual rainfall:** 800–1200 mm**Typical local abundance:** Frequent.**Vegetation:** Eucalypt open-forest e.g. with *Eucalyptus cypellocarpa*, *Eucalyptus piperita*, *E. melliodora*, *E. pilularis*, *E. globoidea*; or woodland e.g. with *Angophora bakeri*, *Corymbia eximia*, *Angophora floribunda*.**Substrate:** Loamy soils on sandstone, granite, often with localised shale influence, low-medium nutrient soil, well-drained.**Exposure:****Conservation****Conservation:** Widespread species, probably adequately conserved.***Eucalyptus quadrangulata*****MYRTACEAE**

White-topped Box

Life history**Growth form:** Tree to 50 m high, with grey fibrous-flaky bark persistent on trunk and branches, smooth above, white or grey shedding in ribbons. Juvenile leaves sessile, opposite for many pairs (Brooker & Kleinig 1983).**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, February–March.**Fruit/seed:** Woody capsule 5–7 mm long**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Germinates in landslip-created gaps in moist forest (M. Robinson pers. comm.).**Fire response:** Resprouts from epicormic buds.**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC; Qld.**Distribution Sydney area:** Illawarra to Yerranderie.**Select locations:** CC: The Oaks, Yerranderie, Mt Keira, Mt Kembla, Dapto, Meryla, Berry.**Habitat****Habitat:** Slopes.**Altitude:** 0–500 m**Annual rainfall:** 900–1400 mm**Typical local abundance:** Frequent.**Vegetation:** Moist tall open-forest e.g. with *Syncarpia glomulifera*, *Eucalyptus paniculata* with moist understorey e.g. *Doryphora sassafras*, *Acacia melanoxylon*; drier open-forest e.g. with *Eucalyptus maculata*, *E. crebra*, *E. longifolia*, *E. eugenioides*, *E. tereticornis*; emergent above dry rainforest (M. Robinson pers. comm.).**Substrate:** Clay soil on shale, medium nutrients. Coal Measures, Bumbo Latite in Illawarra (M. Robinson pers. comm.).**Exposure:****Conservation****Conservation:** Sites in lowland Illawarra, often disturbed with *Lantana*, threats include housing and weeds (M. Robinson pers. comm.).

Eucalyptus racemosa

MYRTACEAE

Narrow-leaved Scribbly Gum

Life history

Growth form: Tree to 15 m high; white, grey or yellow bark smooth, with scribbles, shedding in short ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, February–March, June–September. Probably pollinated by honeybees, native bees, flies and other insects (P. Kubiak pers. comm.).

Fruit/seed: Woody capsule 5–7 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds on trunk and branches, or base.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Browsed by Koala *Phascolarctos cinereus* but not suitable for sustained feeding of this species alone; not as palatable as *Eucalyptus haemastoma* (Hawkes 1978).

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Munmorah to Port Jackson, though intergradation with *Eucalyptus haemastoma* occurs south of Port Jackson.

Select locations: CC: Mona Vale, Bucketty, Old Northern Road, Cowan, Terrey Hills, Hornsby, Lane Cove River, Outer Domain, Field of Mars.

Habitat

Habitat: Ridges and upper slopes.

Altitude: 0–300 m

Annual rainfall: 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Woodland e.g. with *Angophora costata*, *Corymbia gummifera*, *E. haemastoma*; scrub e.g. with *Angophora hispida*.

Substrate: Shallow, sandy soil on sandstone, low nutrients.

Exposure:

Conservation

Conservation: Local endemic species, Port Jackson is southern geographical limit. Probably adequately conserved.

Eucalyptus radiata

MYRTACEAE

Narrow-leaved Peppermint

Life history

Growth form: Tree to 30 m high, with shortly fibrous bark persistent on trunk and larger branches, smooth above, grey, shedding in long ribbons. Leaves with strong peppermint scent when crushed (Brooker & Kleinig 1983).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December. Flowers annually (House 1997).

Fruit/seed: Woody capsule 5–7 mm diam., fruit retained on tree for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seedlings require mycorrhizal fungi for healthy growth (Jones & Elliot 1986).

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Foodplant of moth caterpillars *Circopetes obtusata*, *Entometa fervens* and *Crypsiphona oculitaria* (Coupar & Coupar 1992). Association with mycorrhizal fungi. Oil valued for medicinal and industrial use (Johnson & Burchett 1996). Browsed by Koala *Phascolarctos cinereus*, moderate palatability (Hawkes 1978).

Distribution

Status/origin: Native.

Botanical subregions: SC CT ST; Vic.

Distribution Sydney area: Tablelands, Rylstone to Penrose.

Select locations: CT: Mt Coricudgy, Charbon, Mt Cameron, Clarence, Mt Wilson, Blackheath Wentworth Falls, Edith, Jenolan Caves, Wombeyan Caves, Mt Jellore, Mittagong, Robertson, Carrington Falls, Wingello.

Habitat

Habitat: Cold, wet areas.

Altitude: 700–1200 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Open-forest e.g. with *Eucalyptus dalrympleana*, *E. pauciflora*, *E. blaxlandii*, *E. fastigata*.

Substrate: Sandy clay to clay soils on sandstone, granite, shale, basalt, low to high nutrients.

Exposure:

Conservation

Conservation: Rylstone area is northern geographical limit, conservation status unknown.

Eucalyptus resinifera* subsp. *resinifera**MYRTACEAE**

Red Mahogany

Life history

Growth form: Tree generally 10–20 m high, one of the largest trees in the Hornsby district according to W.F. Blakely (Herbarium specimen 1918).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, October–February. Probably pollinated by honeybees, native bees, and other insects (P. Kubiak pers. comm.).

Fruit/seed: Woody capsule 7–11 mm long, retained on tree for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds (at Myall Lakes, Myerscough et al. 1995).

Resprouted from base, trunk and branches after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Interaction with other organisms: Fruit reported from pellets of Currawongs (Buchanan 1989a). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995).

Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Resistant to termite attack (Froggatt 1923).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC.

Distribution Sydney area: Coast, Gosford to Cordeaux.

Select locations: CC: Gosford, Newport, Annangrove, Hornsby, Epping, Hunters Hill, Burwood, Rookwood Cemetery, Cabramatta, Hurstville, Oatley, Sutherland, Royal NP, Cordeaux colliery.

Habitat

Habitat: Shale forest.

Altitude: 0–300 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Locally abundant.

Vegetation: Eucalypt open-forest e.g. with *Eucalyptus pilularis*, *Angophora costata*, *Corymbia gummifera*, *Eucalyptus piperita*; with *E. umbra* (on dunes).

Substrate: Clay soils on shale or shale–sandstone transition, occasionally on sandstone soils or sanddunes, medium–high fertility.

Exposure:

Conservation

Conservation: Not well conserved, shale and shale–sandstone transition habitats now rare.

Eucalyptus robertsonii* subsp. *hemisphaerica

MYRTACEAE

Robertson's Peppermint

Life history

Growth form: Tree to 30 m high, shortly fibrous bark persistent on trunk and larger branches or throughout, grey to grey-brown.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers:

Fruit/seed: Woody capsule 5–7 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds.

Interaction with other organisms: Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Orange district.

Select locations: CT: Upper Meroo, Cudgegong, Mullion Creek, Oberon to Burruga.

Habitat

Habitat: Woodland.

Altitude: 700–900 m **Annual rainfall:** 700–1000 mm

Typical local abundance: Frequent.

Vegetation: Grassy or shrubby woodland e.g. with *Eucalyptus macrorhyncha*, *E. rossii*, *E. dives*, *E. mannifera*, *E. dalrympleana*.

Substrate: Lighter soils, often on granite, quartzite, low to medium nutrients.

Exposure:

Conservation

Conservation: Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 2V on national rare species list (Briggs & Leigh 1996).

Eucalyptus robusta

MYRTACEAE

Swamp Mahogany

Life history**Growth form:** Tree to 25 m high with persistent bark.**Vegetative spread:** No.**Longevity:** More than 200 years. Trees reputedly planted in Royal Botanic Gardens Sydney in 1813, still healthy.**Primary juvenile period:****Flowers:** White, March–September, peak May–June.**Fruit/seed:** Woody capsule, 10–18 mm long, mature May–October.**Dispersal, establishment & growth:** Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank. Relatively slow-growing. Stem diameter at breast height 30 cm after 30 years, 56–96 cm after 180 years (at Royal Botanic Gardens Sydney).**Fire response:** Resprouts above ground level with epicormic shoots (Fox 1988).**Interaction with other organisms:** Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Leaves browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Leaves frequently eaten by leaf-eating insects. Galls caused by scale insects *Brachyscelis munita*, *Opisthoscelis pisiformis*; foliage often eaten by Psyllid/lerp insects and beetles *Anoplognathus* species and *Xylonychus eucalypti*; tree frequented by Double Drummer cicada *Thopha saccata*; larvae of staghorn beetle *Ceratognathus froggattii* and beetle *Moechidius rugosus* live and pupate in the bark; wood-moth *Charagia splendens* breeds on tree forming a thick felty bag around a branch (Maiden & Campbell 1896). Host-specific to rectangular-lerp-forming psyllid *Glycaspis siliciflava* (Moore 1988).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC; Qld.**Distribution Sydney area:** Mainly coastal.**Select locations:** CC: Gosford, Woy Woy, Avalon, Lower Portland, Little Cattai Creek, Richmond (1902), Drummoyne, Kogarah, La Perouse, Kurnell, (Bellambi Lagoon, Puckeys Beach, M. Robinson pers. comm.).**Habitat****Habitat:** Low swampy sites and coastal sandstone escarpment.**Altitude:** 0–50 m **Annual rainfall:** above 700 mm**Typical local abundance:** Dominant–frequent.**Vegetation:** Dominant in swamp forest or with *Melaleuca* species e.g. *Melaleuca linariifolia*, *M. ericifolia*.**Substrate:** Sandy alluvial soils or sandstone hillsides. Watertable mostly high, moisture supply continuous, fresh–brackish. Colonises low pH (2.5–6.5) acid sulphate estuarine soils in the Wyong area (Payne 1992). Mature trees salt-tolerant but not seedlings (Johnson & Burchett 1996).**Exposure:** Light shade–full sun.**Conservation****Conservation:** As the only significant consistent winter-flowering tree in the Gosford–Wyong areas it is regarded as a ‘keystone’ species for bird and animal conservation. *Eucalyptus robusta* forest is now very fragmented and vulnerable to further clearing and degradation (R. Payne pers. comm.). Poorly conserved and threatened in Illawarra (M. Robinson pers. comm.).

Eucalyptus rossii

MYRTACEAE

Inland Scribbly Gum

Life history

Growth form: Tree to 20 m high; white or yellow smooth bark with scribbles, shedding in short ribbons.

Vegetative spread: No.

Longevity: Radio-carbon dating of growth rings in ring-barked trees 450 years, and 120 years for regrowth (Williams & Brooker 1997).

Primary juvenile period:

Flowers: White, December–February.

Fruit/seed: Woody capsule 5–6 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from epicormic buds and lignotuber. Seedling establishment noted along charcoal beds from burnt tree trunks (at Olinda), presumably indicating seedling shed post-fire at Olinda (D.H.B.). Regrowth from surviving rootstocks and seedlings recorded less than 1 year after fire (Purdie 1977).

Interaction with other organisms: Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Host-specific to gall-forming psyllid/lerp insect *Glycaspis immacera* (Moore 1088). Host to *Ogmograptis scribula* Scribble Moth (Jones & Elliot 1986). Moth larvae *Eupselia* species mine the leaves and pupate on leaf tips or twigs (Common 1990).

Distribution

Status/origin: Native.

Botanical subregions: NT CT ST NWS CWS SWS.

Distribution Sydney area: Tablelands, Rylstone to Abercrombie.

Select locations: CT: Rylstone, Nullo Mountain, Hill End, Glenowlan Mountain, Glen Davis, Ben Bullen, Winburndale NR, Marangaroo, Perth, O'Connell, Coss River, Abercrombie.

Habitat

Habitat: Hillsides.

Altitude: 700–1000 m **Annual rainfall:** 600–900 mm

Typical local abundance: Frequent.

Vegetation: Eucalypt woodland e.g. with *Eucalyptus macrorhyncha*, *E. polyanthemos*, *E. goniocalyx*, *E. dives*, *E. sparsifolia* with shrubby understorey.

Substrate: Shallow, stony soils on sandstone, conglomerate, quartzite, slate, metasediments; low nutrients, well-drained.

Exposure:

Conservation

Conservation: Probably adequately conserved in the area e.g. Wollemi NP, Winburndale NR.

Eucalyptus rubida* subsp. *canobolensis

MYRTACEAE

Candlebark renamed *Eucalyptus canobolensis* (Hunter 1998, December)**Life history**

Growth form: Tree to about 10 m high; trunk smooth to the ground with powdery, white grey, red or pink bark, shedding in long ribbons.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: Inflorescence 3-flowered, January–February.

Fruit/seed: Woody capsule 5–7 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution**Status/origin:** Native.**Botanical subregions:** CT.**Distribution Sydney area:** Mt Canobolas.**Select locations:** CT: Mt Canobolas.**Habitat****Habitat:** Mountain summit and northern slope.**Altitude:** 1200–1400 m **Annual rainfall:** 1000 mm**Typical local abundance:** Frequent.**Vegetation:** Eucalypt woodland, co-dominant with *Eucalyptus pauciflora* subsp. *canobolensis* passes into subsp. *rubida* on lower slopes.**Substrate:** Volcanic rock, medium nutrients.**Exposure:****Conservation****Conservation:** Local endemic, restricted to summit of Mt Canobolas. Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 2VC- on national rare species list (Briggs & Leigh 1996).***Eucalyptus rubida* subsp. *rubida*****MYRTACEAE**

Candlebark

Life history**Growth form:** Tree to 40 m high, with bark smooth to the ground, smooth above, powdery, white, grey, red or pink, shedding in long ribbons.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, inflorescence 3-flowered, January to February.**Fruit/seed:** Woody capsule 5–7 mm diam., probably retained for less than a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Quick-growing (at Orange, C. Pratten pers. comm.).**Fire response:** Resprouts from lignotuber and epicormic buds (Strasser et al. 1996).**Interaction with other organisms:** Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Foodplant of Lawn Scarab Beetle *Sericesthis geminata* (Hughes 1974). Host to larvae of Autumn Gum Moth *Mnesampela privata* (CSIRO 1996). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978).**Distribution****Status/origin:** Native.**Botanical subregions:** CT ST SWS; Vic., Tas.**Distribution Sydney area:** Tablelands.**Select locations:** CT: Olinda, Mullion Creek, Capertee, Ben Bullen, Lidsdale, Blayney, Tarana, Mt Victoria, Oberon, Rockley, Biggar, Berrima, Wingello.**Habitat****Habitat:** Cold flats, creeks.**Altitude:** 700–1000 m **Annual rainfall:** 600–1200 mm**Typical local abundance:** Frequent to occasional.**Vegetation:** Eucalypt woodland e.g. with *Eucalyptus viminalis*.**Substrate:** Sandy clay soil, medium nutrients, sometimes poorly-drained, on alluvial flats.**Exposure:****Conservation****Conservation:** Conservation status unknown.

Eucalyptus saligna

MYRTACEAE

Sydney Blue Gum

Life history

Growth form: Tree usually about 50 m high, with smooth white or grey bark shedding in short ribbons or flakes, sometimes persistent on lower trunk. Usually has lignotuber (Boland et al. 1984, Williams & Woinarski 1997). All populations south of Port Jackson show some genetic influence from *E. botryoides* and local introgression of these populations with *E. botryoides* has produced a number of more recent hybrid swarms (Harden 1992). Individuals are often referred to as being *Eucalyptus botryoides/saligna* (see separate entry).

Vegetative spread: No.

Longevity: More than 200 years.

Primary juvenile period:

Flowers: White, December–February.

Fruit/seed: Woody capsule 5–8 mm long, mature fruit retained on tree December–September as canopy-stored seedbank though probably gradually shed during this time. Seed held in canopy 2 years (Van Loon 1966). Seed shed December 1994, seedlings noted February 1995. Seed weight 0.40 mg (Cremer 1977).

Dispersal, establishment & growth: Diaspore: seed, no special morphology (Westoby et al. 1990), probably wind-dispersed locally. Average seed dispersal is 35.3 m from parent plant when released at a height of 40 m in 10 km/h wind (Cremer 1977). Seeds germinate without treatment, no dormancy. Seedlings with lignotubers (Brooker & Kleinig 1983). Highest nitrogen content in leaves of saplings was in early spring yet growth occurred in summer (Bell & Williams 1997).

Fire response: Resprouts from epicormic buds on lower trunk and branches after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Interaction with other organisms: Host plant of Cerambycid longicorn beetles *Agrianome spinicollis* (Hawkeswood 1991), *Paroplites australis* (Hawkeswood 1992b), *Tessaromma undatum* (Hawkeswood 1993). Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Host to larvae of moth Gum Leaf Skeletoniser *Uraba lugens* (CSIRO 1996) and Bentwing Ghost Moth *Zelotypia stacyi* which bore into the stems and branches of saplings (Common 1990). Browsed by Koala *Phascolarctos cinereus*, (Hawkes 1978). Bell Miner *Manorina melanophrys* nests in dying trees, leaves eaten by psyllid species (Stone 1996). Susceptible to damage from root compaction by e.g. cattle, horses (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT; Qld.

Distribution Sydney area: Mainly Gosford–Wyong area, and Sydney's North Shore.

Select locations: CC: Wattagans, Putty, Ourimbah, Gosford, Hornsby, Annangrove, Turramurra, Lane Cove, Gladesville, Wheeny Creek, Grose River.

Habitat

Habitat: Lower slopes and gullies.

Altitude: 0–500 m **Annual rainfall:** 1100–1400 mm

Typical local abundance: Dominant–frequent.

Vegetation: Tall open-forest e.g. with *Eucalyptus pilularis*, *E. paniculata* (e.g. Blue Gum High Forest & Glen Forest of Benson & Howell 1994) *E. viminalis*, *E. deanei*, *E. elata* (Hawkesbury–Narrabeen sheltered Forest of Ryan et al. 1996).

Substrate: Clay soils on shale (particularly Wianamatta) Shale, alluvium or diatremes, basalt, medium to high nutrients. Watertable mostly low, moisture supply intermittent, fresh.

Exposure: Sheltered sites.

Conservation

Conservation: Port Jackson is the southern geographical limit for *Eucalyptus saligna*; see *Eucalyptus botryoides* X *saligna* for populations south of Port Jackson. The Blue Gum High Forest community on the North Shore is listed as an Endangered Community under the NSW *Threatened Species Conservation Act 1995*; *Eucalyptus saligna* is a significant species here. Remnants are threatened by weed invasion e.g. *Cinnamomum camphora*, *Lonicera japonica*, *Ligustrum sinense*. Conservation status of *E. saligna* in Gosford–Wyong area is unknown.

Eucalyptus scias* subsp. *callimastha

MYRTACEAE

Large-fruited Red Mahogany

Life history**Growth form:** Tree or rarely a mallee, to 20 m high, with persistent dark red-brown stringy bark**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:****Fruit/seed:** Woody cup-shaped capsule 9–14 mm diam.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC.**Distribution Sydney area:** Helensburgh to Batemans Bay.**Select locations:** CC: Garrawarra, Meryla Pass, Barrengarry Mountain, Bomaderry.**Habitat****Habitat:** Hillslopes.**Altitude:** 0–600 m **Annual rainfall:** 1200–1400 m**Typical local abundance:** Rare.**Vegetation:** Moist eucalypt forest e.g. with *Eucalyptus maculata*, *Corymbia gummifera*, *Syncarpia glomulifera*.**Substrate:** Sandy soils on sandstone, low nutrients.**Exposure:****Conservation****Conservation:** Helensburgh is northern geographical limit (Harden 1990), conservation status unknown.***Eucalyptus scias* subsp. *scias***

MYRTACEAE

Large-fruited Red Mahogany

Life history**Growth form:** Tree to 20 m high, or sometimes a mallee.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, December–February. Pollinated by gliders (House 1997).**Fruit/seed:** Woody cup-shaped capsule 9–20 mm diam.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Cessnock to Helensburgh.**Select locations:** CC: Pokolbin SF, Olney, Calga, Ourimbah, Kincumber, West Head, Narrabeen, Manly, North Head.**Habitat****Habitat:** Moist eucalypt forest.**Altitude:** 0–200 m **Annual rainfall:** 1200–1600 mm**Typical local abundance:** Occasional.**Vegetation:** Moist eucalypt forest e.g. with *Syncarpia glomulifera*, *Eucalyptus pilularis*, *E. acmenoides*, *E. paniculata*, *Allocasuarina torulosa*, *Livistona australis*.**Substrate:** Sandy soil on sandstone, laterite, low to medium nutrients.**Exposure:** Full sun to medium shade, exposed to sheltered.**Conservation****Conservation:** Regionally restricted subspecies. Populations south of Broken Bay are very vulnerable.

Eucalyptus sclerophylla

MYRTACEAE

Hard-leaved Scribbly Gum

Life history**Growth form:** Tree 5–20 m high, with smooth, scribbly bark.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, January to April.**Fruit/seed:** Woody capsule 4–6 mm diam., retained for over a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.**Fire response:** Generally resprouts from epicormic buds or lignotuber. May be killed (Bell pers. comm.).**Interaction with other organisms:** Severe defoliation caused by cup moths after dry weather, and Blacktown area (M. Smith 1992 pers. comm.). Host of *Ogmograptis scribula* Scribble Moth (Jones & Elliot 1986). Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993).**Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST.**Distribution Sydney area:** Blue Mountains, Western Sydney.**Select locations:** CC: Howes Valley, Castlereagh NR, Faulconbridge, Condell Park, Holsworthy, Bargo, Nowra. CT: Newnes SF, Mt Wilson, O'Connell, Mt Victoria, Blackheath, Wentworth Falls, Hill Top, Mittagong, Fitzroy Falls, Wingello.**Habitat****Habitat:** Stony ridges to low lying sites.**Altitude:** 0–1100 m**Annual rainfall:** 800–1400 mm**Typical local abundance:** Frequent.**Vegetation:** Woodland e.g. with *Eucalyptus sieberi*, *E. piperita*, *E. mannifera*, *E. consideniana*, *E. radiata*, *E. punctata*, *Angophora bakeri*, *Corymbia gummifera*; scrub e.g. with *Eucalyptus stricta*, *E. gregsoniana*.**Substrate:** Sandy soils on sandstone, quartzite, conglomerate, low nutrients.**Exposure:****Conservation****Conservation:** Widespread and probably adequately conserved.***Eucalyptus siderophloia***

MYRTACEAE

Grey Ironbark

Life history**Growth form:** Tree generally 10–25 m high.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White, October–January. Flowering during and /or after growth periods (House 1997).**Fruit/seed:** Woody capsule 5–8 mm long.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Shoot growth peaks in autumn and spring (House 1997).**Fire response:** Probably resprouts from epicormic buds.**Interaction with other organisms:** Host plant of Cerambycid beetle *Pachydissus serucus* (Hawkeswood 1993).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC; Qld.**Distribution Sydney area:** Sporadic.**Select locations:** CC: Morisset, Wyong, Mangrove Creek, Upper Colo, Commodore Heights, Concord, Burwood, Wiley Park, Riverwood, Burwood, Revesby.

Habitat

Habitat: Shale forest.

Altitude: 0–200 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Open-forest e.g. with *Eucalyptus fibrosa*, *E. moluccana*, *E. globoidea*, *Angophora floribunda*, *Eucalyptus maculata*, *E. umbra*.

Substrate: Clay soils on shale or gravelly soils e.g. on Wianamatta Shale, medium nutrients, rarely on sandstone (e.g. at Commodore Heights).

Exposure:

Conservation

Conservation: Revesby is the southern geographical limit. Rare in Sydney area, most shale forest having been cleared. Conservation status in Wyong area unknown.

Eucalyptus sideroxylon**MYRTACEAE**

Mugga

Life history

Growth form: Tree generally 5–10 m high with ‘ironbark’ persistent to smaller branches or throughout.

Vegetative spread: No.

Longevity: More than 100 years but shorter-lived in cultivation.

Primary juvenile period:

Flowers: White, pink, red, or pale yellow, June–November. Pollinated by honeybees, birds (Williams & Woinarski 1997). Inner anthers deposit clumps of pollen on undersurface of the stigma providing a secondary position for pollen presentation to insects (House 1997).

Fruit/seed: Woody capsule 5–11 mm long.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Seeds require light for germination, optimum temperature 20°C (Langkamp 1987). Lignotubers developed in seedlings 9–12 weeks old and 9–16 cm high in greenhouse conditions; lignotubers persist in mature trees (Kerr 1925).

Fire response: Resprouts (Bell pers. comm.). Secondary juvenile period 3 years in Victoria (Wark et al. 1987).

Interaction with other organisms: Nectar eaten by Little Lorikeet *Glossopsitta pusilla* (Lepschi 1993), foodplant of Swift Parrot and Regent Honeyeater (D. Andrews pers. comm.). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Browsed by Koala *Phascolarctos cinereus* (Hawkes 1978). Host-specific to round-oval-lerp-forming psyllid *Glycaspis sudicola* (Moore 1988). Oil valued for medicinal and industrial use (Johnson & Burchett 1996).

Distribution

Status/origin: Native, cultivated widely as ornamental.

Botanical subregions: NC CC NWS CWS SWS NWP SWP; Qld, Vic.

Distribution Sydney area: Mainly western Sydney.

Select locations: CC: Glen Davis, Berkshire Park, Shanes Park, Villawood, Sefton, Cabramatta, Moorebank.

Habitat

Habitat: Dry woodland.

Altitude: 0–600 m **Annual rainfall:** 600–1000 mm

Typical local abundance: Occasional.

Vegetation: Woodland e.g. Castlereagh Woodland (Benson 1992) with *Eucalyptus fibrosa*, *Melaleuca decora*, *Angophora bakeri* or with *Eucalyptus crebra* (Glen Davis).

Substrate: Sandy soil on Tertiary alluvium, low nutrients, sometimes poorly-drained or periodically wet.

Exposure: Full sun.

Conservation

Conservation: Reported from Castlereagh Nature Reserve, conservation status elsewhere unknown.

Eucalyptus sieberi

MYRTACEAE

Silvertop Ash, Black Ash

Life history

Growth form: Tree generally 5–25 m high, sometimes multi-stemmed mallee. Bark shortly fibrous grey-brown to brown-black, persistent on trunk and larger branches.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, July–December (peak October).

Fruit/seed: Woody capsule 8–11 mm long, retained for up to a year. Seed fall throughout the year, peaking January–March, en masse following fire (Bridges 1983).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Reduction in overstorey competition e.g. by treefall, is associated with release of previously suppressed lignotuberous growth (Bell & Williams 1997).

Fire response: Resprouts from lignotuber or epicormic buds. Secondary juvenile period 4 years (Bridges 1983).

Interaction with other organisms: Susceptible to *Phytophthora cinnamomi* (Halsall 1978)

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST; Vic., Tas.

Distribution Sydney area: Widespread.

Select locations: CC: Morisset, Kulnura, Berowra, Mona Vale, Manly, La Perouse, Cronulla, Maddens Plains, Bulli, Carrington Falls. CT: Cullen Bullen, Lithgow, Blackheath, Kings Tableland, Jenolan Caves, Kanangra Walls, Wombeyan Caves, Hill Top, Moss Vale, Wingello.

Habitat

Habitat: Ridges and upper slopes.

Altitude: 0–1100 m

Annual rainfall: 1000–1600 mm

Typical local abundance: Dominant–occasional.

Vegetation: Eucalypt open-forest e.g. with *Eucalyptus piperita*, *Corymbia gummifera*, *Angophora costata*; or mallee e.g. with *Eucalyptus stricta* with shrubby understorey.

Substrate: Shallow soils on sandstone, conglomerate quartzite, low nutrients.

Exposure: Full sun to light shade, often on exposed sites.

Conservation

Conservation: A widespread species, probably adequately conserved e.g. Blue Mountains NP, Royal NP, Ku-ring-gai Chase NP, Morisset is northern geographical limit.

Eucalyptus smithii

MYRTACEAE

Ironbark Peppermint, Gully Gum

Life history

Growth form: Tree or mallee to 40 m high, with persistent grey-brown to brown-black shortly fibrous bark, on lower trunk, smooth above, white to grey shedding in long ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, January–March.

Fruit/seed: Woody capsule 4–7 mm long, retained for up to a year.

Dispersal, establishment & growth: Seeds require light for germination, optimum temperature 20–25°C (Langkamp 1987).

Fire response:

Interaction with other organisms: Oil valued for medicinal and industrial use (Johnson & Burchett 1996).

Distribution

Status/origin: Native.

Botanical subregions: SC CT ST; Vic.

Distribution Sydney area: Illawarra and Southern Highlands.

Select locations: CT: Yerranderie, Hill Top, Mittagong, Mt Kembla, Wingello, Bindook Highlands, Macquarie Pass, Robertson.

Habitat

Habitat: Hillslopes.

Altitude: 300–900 m **Annual rainfall:** 900–1600 mm

Typical local abundance: Frequent.

Vegetation: Open-forest e.g. with *Eucalyptus obliqua*, *E. globoidea*, *E. piperita*, *E. radiata*; or tall open-forest e.g. with *Eucalyptus cypellocarpa*, *E. muelleriana*, *E. saligna/botryoides*.

Substrate: Deep sandy soils, often scree and colluvium, on sandstone, slates, quartzite, medium nutrients. Coal Measures and Quaternary talus in Illawarra (M. Robinson pers. comm.).

Exposure:

Conservation

Conservation: Yerranderie area is northern geographical limit, conservation status unknown.

Eucalyptus sp. **Howes Swamp** (M. Doherty 26, 207054 NSW)

MYRTACEAE**Life history**

Growth form: Tree to 25 m high with thin wavy, fibrous grey-brown bark.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers:

Fruit/seed: Woody capsule 3 mm diam.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Howes Swamp.

Select locations: CC: Howes Swamp.

Habitat

Habitat:

Altitude: 400 m **Annual rainfall:** 900 mm

Typical local abundance: Very rare.

Vegetation: Open-forest e.g. with *Angophora floribunda*, *Eucalyptus piperita*, *E. parramattensis*, *E. amplifolia*.

Substrate: Deep sandy alluvium from sandstone, low nutrients.

Exposure:

Conservation

Conservation: A recently recognised taxon that is poorly known, recorded only from Howes Swamp on Putty Road, conservation status unknown. Listed as Endangered (schedule 1) under NSW *Threatened Species Conservation Act 1995*, coded 2ECi on national rare species list (Briggs & Leigh 1996).

Eucalyptus sparsifolia

MYRTACEAE

Narrow-leaved Stringbark

Life history

Growth form: Small tree generally 5–20 m high, sometimes reduced to mallee, with persistent grey–brown stringy bark. *Eucalyptus sparsifolia* is distinguished from *E. oblonga* by the combination of linear juvenile leaves, narrow-lanceolate to lanceolate adult leaves and narrow–fusiform acute buds; intergrading populations occur with *E. eugenioides*, *E. globoidea*, *E. oblonga* and *E. agglomerata* (Johnson & Hill 1990).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, sporadically throughout the year.

Fruit/seed: Woody capsule 5–8 mm diam., retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, canopy-stored seedbank, no dormancy mechanism.

Fire response: Plants resprout from lignotuber and epicormic buds.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT NWS CWS.

Distribution Sydney area: Widespread.

Select locations: CC: Mt Kindarun, Glen Davis, Bucketty, Bilpin, Maroota, Cowan, Hornsby, Cheltenham, Springwood, Castlereagh SF, Balgowlah, Picnic Point, Burragorang, The Oaks, Gingra Creek, Wedderburn, Tahmoor, Yerrinbool. CT: Mt Coricudgy, Ilford, Mt Cameron, Newnes SF, Mt Wilson, Mt Victoria, Katoomba, Wentworth Falls.

Habitat

Habitat: Rises and upper slopes.

Altitude: 0–1100 m

Annual rainfall: 700–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Dry eucalypt forest or woodland e.g. with *Corymbia gummifera*, *C. eximia*, *Eucalyptus consideriana*, *E. fibrosa*, *Angophora bakeri*, *A. costata*, *Eucalyptus resinifera*, *E. sclerophylla*, *E. rossii*, *E. macrorhyncha*.

Substrate: Shallow, sandy, soil on sandstone, shale / sandstone transition, Tertiary alluvium, low nutrients. It occurs on sandy but somewhat more fertile and deeper soil than *Eucalyptus oblonga* (Johnson & Hill 1990).

Exposure: Full sun.

Conservation

Conservation: Widespread and probably adequately conserved. Not considered to be at risk (Johnson & Hill 1990).

Eucalyptus squamosa

MYRTACEAE

Scaly Bark

Life history

Growth form: Tree 5–12 m high, sometimes reduced to mallee, with persistent grey to red-brown bark.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, May–October.

Fruit/seed: Woody capsule 6–8 mm diam., retained for up to a year. Fruits and buds often disfigured by ‘warts’ (Brooker & Kleinig 1983).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouts from lignotuber and epicormic buds.

Interaction with other organisms: Host-specific to round-lerp-forming psyllid *Glycaspis nancyana* (Moore 1986), Cerambycid longicorn beetle *Eurynassa australis* (Hawkeswood 1992b).

Distribution**Status/origin:** Native.**Botanical subregions:** NC CC.**Distribution Sydney area:** Mainly coast and lower Blue Mountains.**Select locations:** CC: Wollombi, Mellong Range, Wondabyne, Brooklyn, Cowan, Berowra, Winmalee, Terrey Hills, Cheltenham, Como, Loftus, Engadine, Wedderburn, Nattai River.

Habitat**Habitat:** Sandstone ridges**Altitude:** 0–300 m **Annual rainfall:** 1000–1400 mm**Typical local abundance:** Rare–occasional.**Vegetation:** Dry woodland e.g. with *Corymbia gummifera*, *Eucalyptus eximia*, *E. haemastoma*, *E. sparsifolia*, *E. haemastoma*, *E. punctata*; or scrub e.g. with *Angophora hispida*.**Substrate:** Shallow sandy soil on sandstone.**Exposure:** Full sun to light shade.

Conservation**Conservation:** Conservation status unknown.

Eucalyptus stellutata**MYRTACEAE**

Black Sally

Life history**Growth form:** Small tree generally 5–15 m high, with persistent grey-black shortly fibrous bark on lower trunk, smooth above, grey or green, shedding in short ribbons.**Vegetative spread:** No.**Longevity:** More than 100 years.**Primary juvenile period:****Flowers:** White/cream, February–May, peak April. Pollinated by flies, beetles, bees; stamens wither after 9–11 days (House 1997).**Fruit/seed:** Woody capsule 3–5 mm long, retained for up to a year.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism. Germination rates increase with stratification (Elliot & Jones 1986).**Fire response:****Interaction with other organisms:**

Distribution**Status/origin:** Native.**Botanical subregions:** NT CT ST; Vic.**Distribution Sydney area:** Tablelands.**Select locations:** CT: Hargraves, Capertee, Sunny Corner, Wallerawang, Kirkconnell, Marrangaroo, Hartley Vale, Oberon, Rockley, Colong Swamps, Wombeyan Caves, Bowral, Wingello.

Habitat**Habitat:** Cold flats and watercourses.**Altitude:** 800–1200 m **Annual rainfall:** 700–1000 mm**Typical local abundance:** Frequent but very localised.**Vegetation:** Woodland e.g. with *Eucalyptus pauciflora*, *E. mannifera*, *E. bridgesiana*, *E. viminalis*, *E. radiata*.**Substrate:** Loamy or alluvial soils from shales, volcanics, medium nutrients. J.L. Boorman in 1913 described *E. stellutata* as ‘a common plant indicative of cold snow country, found in all places throughout the State where cold weather prevails. A useless timber, faulty, soft and brittle. Used only as firewood’.**Exposure:**

Conservation**Conservation:** Vulnerable, clearing and continued grazing has reduced its habitat.

Eucalyptus stricta

MYRTACEAE

Mallee Ash

Life history

Growth form: Mallee to 5 m high, with smooth grey or grey-brown bark shedding in ribbons. Intergrades with *E. apiculata*, *E. obstans* and *E. dendromorpha*.

Vegetative spread: No.

Longevity: Indefinite.

Primary juvenile period:

Flowers: December–January.

Fruit/seed: Woody capsule 7–10 mm long, retained for up to a year.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Stems killed, resprouts from lignotuber.

Interaction with other organisms: Host-specific to gall-forming psyllid/lerp insect *Glycaspis constricta* (Moore 1088).

Distribution

Status/origin: Native.

Botanical subregions: CC CT ST.

Distribution Sydney area: Mainly Blue Mountains, rare on the coast.

Select locations: CC: Mangrove Mountain, Terrey Hills, Davidson, Frenchs Forest, Stanwell Tops, Avon Dam, Jamberoo Mountain. CT: Mt Wilson, Blackheath, Kings Tableland, Katoomba, Mt Solitary, Kanangra Walls, Mt Werong, Wombeyan Caves, Bindook, Wingello.

Habitat

Habitat: Ridges and plateaus.

Altitude: 0–1200 m

Annual rainfall: 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Scrubby heath e.g. with *Eucalyptus rupicola*, *E. gregsoniana*, *E. pauciflora*, *E. mannifera*, *Allocasuarina nana* (Montane Heath and Lower Blue Mountains Heath of Keith & Benson 1988); or woodland e.g. with *Eucalyptus sieberi*, *E. sclerophylla*, *E. punctata*.

Substrate: Shallow sandy soils, on sandstone, quartzite, occasionally on granite, low nutrients, sometimes poorly-drained.

Exposure: Exposed sites, full sun.

Conservation

Conservation: Newnes Plateau is northern geographical limit, probably adequately conserved e.g. Blue Mountains NP, Wollemi NP.

Eucalyptus tereticornis

MYRTACEAE

Forest Red Gum

Life history

Growth form: Tree generally 10–20 m high with smooth white or grey bark shedding in large flakes. Variable species intergrading with *E. blakelyi* in areas such as the upper Hunter, Goulburn, Cox and Kowmung River valleys.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, September–November. Pollen non-sticky, probably transported by wind and insects (Johnson & Burchett 1996).

Fruit/seed: Woody capsule, 4–8 mm long, mature June–November, retained on tree until shed (probably by November).

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. about 20 m. No soil-stored seedbank, seedling recruitment not fire-related. Seeds require light for germination, optimum temperature 25–30°C (Langkamp 1987).

Fire response: Resprouts strongly from epicormic buds.

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995).

Major staple browse species of Koala *Phascolarctos cinereus* (Hawkes 1978). Host to larvae of Bentwing Ghost Moth *Zelotypia stacyi* which bore into the stems and branches of saplings (Common 1990). Host-specific to round-lerp-forming psyllid *Glycaspis struicis* (Moore 1988). 'Chronic insect infestations and periodic insect outbreaks may be supported by high concentrations of nitrogenous solutes in sap and foliage, especially epicormic foliage, which in turn may be a response to drought or increasing salinity ('physiological drought') (Marsh & Adams 1995).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT ST CWS; Qld, Vic., N.G.

Distribution Sydney area: Widespread, particularly western Sydney, also coastal estuary headlands e.g. Sydney Harbour, Port Hacking.

Select locations: CC: Wye, Dural, Richmond, Woolloomooloo, Bankstown, Cronulla, Bringelly, Campbelltown, The Oaks, Albion Park. CT: Cudgegong, Mt Jellore, Bungonia.

Habitat

Habitat: Eucalypt woodland.

Altitude: 0–900 m

Annual rainfall: 700–1200 mm

Typical local abundance: Dominant–frequent.

Vegetation: Wet or dry forest or woodland with grassy understorey e.g. with *Eucalyptus moluccana*, *E. crebra* (Cumberland Plain Woodland of Benson 1992); *E. melliodora*, *Angophora floribunda* (Kowmung Wilderness Complex of Keith & Benson 1988).

Substrate: Shale, basalt or alluvium, medium to high nutrient soil. Coal Measures, Budgong Sandstone, Bumbo Latite, Berry Siltstone and alluvium in Illawarra (M. Robinson pers. comm.). Resistant to salinity (Bell & Williams 1997).

Exposure: Full sun.

Conservation

Conservation: Widespread species but much of former habitat has been cleared or grazed. Yallah open-forest, floodplain, and beach sand habitats in Illawarra not conserved (M. Robinson pers. comm.). Conservation status elsewhere unknown.

Eucalyptus umbra* subsp. *umbra

MYRTACEAE

Bastard White Mahogany

Life history

Growth form: Tree generally 10–25 m high, sometimes mallee-like on headlands. Bark persistent, thin, grey to red-brown stringy throughout.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, July–November.

Fruit/seed: Woody capsule 7–9 mm diam., retained for up to a year. Seeds 1.8 mm long (Drake 1981).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind or gravity, no dormancy mechanism.

Fire response: Resprouted from lignotuber after high intensity fire (1/94) on Caley Track at Terrey Hills (L.McD.), resprouted from trunk and branches after high intensity fire (1/1994) at Narrabeen (P. Kubiak pers. comm.).

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Host-specific to gall-forming psyllid/lerp insect *Glycaspis inclusa* and round-lerp-forming *G. orientalis* (Moore 1988).

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld.

Distribution Sydney area: Coast, north of Port Jackson.

Select locations: CC: Bucketty, Wyee, Gosford, Terrigal, Wondabyne, Killcare, Cowan, Avalon, Belrose, Manly, Mosman.

Habitat

Habitat: Ridges and coastal headlands.

Altitude: 0–300 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Eucalypt open-forest; woodland e.g. with *Corymbia gummifera*, *Angophora costata*, *Eucalyptus sieberi*, *E. resinifera*.

Substrate: Shallow dry soils on sandstone, shale, low nutrients.

Exposure: Full sun to light shade.

Conservation

Conservation: Port Jackson (e.g. Mosman) is southern geographical limit. Conservation status unknown.

Eucalyptus viminalis

MYRTACEAE

Ribbon Gum

Life history

Growth form: Tree generally to 30 m high, with grey-black shortly fibrous bark on lower trunk and smooth white, grey or yellow bark above, shedding in long ribbons.

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, March–April. Flowers annually (House 1997).

Fruit/seed: Woody capsule 4–8 mm long, retained on tree from maturity for up to 12 months as canopy-stored seed seedbank. Seed weight 0.55 mg (Cremer 1977).

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. about 20 m. No dormancy, no soil-stored seedbank. Average seed dispersal 28.9 m from parent plant when released from a height of 40 m in 10 km/h wind (Cremer 1977).

Fire response: Resprouts from lignotuber and weakly from epicormic buds, mortality following high intensity fire 12.1% (Strasser et al. 1996).

Interaction with other organisms: Foodplant of Koala. Greater Gliders may eat young foliage (Kavanagh 1984). Host plant of Cerambycid beetles *Callidiopsis scutellaris*, *Tessaromma undatum* (Hawkeswood 1993). Foodplant of Lawn Scarab Beetle *Sericesthis geminata* (Hughes 1974). Host to larvae of moth, Gum Leaf Skeletoniser *Uraba lugens* (CSIRO 1996). Crested Shrike-tits *Falcunculus frontatus*, Yellow-bellied Gliders and small dasyurids forage for invertebrates in the shedding bark (Woinarski et al. 1997). Host-specific to round-lerp-forming psyllid *Glycaspis dobsoni* (Moore 1988).

Distribution

Status/origin: Native.

Botanical subregions: CC SC NT CT ST NWS CWS SWS: Qld, Vic., Tas., S.A.

Distribution Sydney area: Widespread mainly on Tablelands.

Select locations: CC: Howes Valley, Cobbitty. CT: Rylstone, Orange, Hassans Walls, Little Hartley, Mt Wilson, Nattai River, Joadja, Moss Vale, Marulan.

Habitat

Habitat: Riverbank, moist forest.

Altitude: 0–1000 m **Annual rainfall:** 700–1400 mm

Typical local abundance: Dominant–frequent.

Vegetation: Tall open-forest e.g. with *Eucalyptus fastigata*; open-forest e.g. with *Angophora floribunda*, *Eucalyptus amplifolia*, *E. dalrympleana*, *E. blaxlandii*, *E. melliodora*.

Substrate: Loamy soils on basalt, diatremes, granite, metasediments, alluvium, medium to high nutrients. Watertable mostly low, moisture supply intermittent. Tolerant of calcareous soils (Johnson & Burchett 1996) though root development is limited by alkaline soils (Bell & Williams 1997). Low survival and growth rate of seedlings stressed by salinity (Bell & Williams 1997).

Exposure: Light shade.

Conservation

Conservation: Occurs mainly on fertile soils that have mostly been cleared for agriculture, and often occurs as remnant trees. Conservation status unknown.

Homoranthus cernuus (R.T. Barker) Craven & S.R. Jones

MYRTACEAE

Life history

Growth form: Spreading shrub 1–1.5 m high, with small leaves 2–5 mm long.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: Yellow, July–November.

Fruit/seed: Indehiscent fruit, with 1–2 seeds.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT CWS.

Distribution Sydney area: Northern Wollemi.

Select locations: CT: Widden Valley, Mt Baker, Lee Creek.

Habitat

Habitat: Rocky outcrops.

Altitude: 600–800 m **Annual rainfall:** 700–800 mm

Typical local abundance: Rare.

Vegetation: Open woodland e.g. with *Eucalyptus agglomerata*, *E. rossii*, *Callitris endlicheri*.

Substrate: Sandy soil on sandstone, low nutrients.

Exposure:

Conservation

Conservation: Coded 3RCa on national rare species list (Briggs & Leigh 1996). Conserved within Wollemi NP.

Kunzea ambigua

MYRTACEAE

Tick Bush

Life history

Growth form: Shrub generally 1–3 m high. Occasionally hybridises with *Kunzea capitata* (L.McD.).

Vegetative spread: No.

Longevity: 15–40 years. Old plants died naturally after 15 years with some replacement by young *Kunzea* seedlings (Bradley 1972), though longer-lived at other sites.

Primary juvenile period: 2–4 years.

Flowers: Cream, October–January. Probably beetle pollinated (Webb 1986). Probably the most significant pollinators are bees, flies, beetles and butterflies, with moths and wasps also acting as pollinators (P. Kubiak pers. comm.).

Fruit/seed: Capsule 2–4 mm long, not woody, with small seeds, shed at maturity. Seeds 1 mm long (Andersen & Ashton 1985).

Dispersal, establishment & growth: Diaspore: seed, spread by wind or water, ant-dispersed at Wilsons Promontory (Anderson & Ashton 1985). Light requiring, prolific seedling recruitment on disturbed sites, particularly on exposed periodically wet soils and subsoils (Price 1979). Early coloniser species of bare open sites. Disappointing as primary coloniser from seed in rehabilitation programs but sometimes very effective in naturally occurring rehabilitation (Temple & Bungey 1980).

Fire response: Killed and re-establish from soil-stored seed. Seedlings established within 6 weeks of high intensity fire (1/1994) at Lane Cove, some flowering and with green fruit within 2 yrs (P. Kubiak pers. comm.). Capacity to regenerate after fire from encapsulated seed has yet to be confirmed although viable seeds recovered from burnt shrubs at Wilsons Promontory (Judd & Ashton 1991) capsules retained in canopy throughout much of summer fire season. Young plants 30 cm high observed in bush unburnt for 13 years (at Field of Mars).

Interaction with other organisms: Shoots damaged by rabbits but not eaten; important for support of nectar-dependent insect and probably a significant source of pollen for native bees (P. Kubiak pers. comm.). Flowers visited by members of the Buprestidae, Scarabaeidae, Mordellidae, and Cleridae (Webb 1986).

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST; Vic., Tas.

Distribution Sydney area: Coast and adjacent plateaus.

Select locations: CC: Brisbane Water NP, Collaroy Plateau, Nielsen Park, Hunters Hill, Earlwood, Londonderry, Shane Park, Wattamolla, Helensburgh, (Calderwood, Yallah, M.R.).

Habitat

Habitat: Rock outcrops, coastal plains.

Altitude: 0–300 m **Annual rainfall:** 700–1400 mm

Typical local abundance: Frequent.

Vegetation: Scrub and heath e.g. with *Allocasuarina distyla*, *Melaleuca nodosa*, *Glochidion ferdinandi*; woodland e.g. with *Corymbia gummifera*, *Eucalyptus piperita*; open-forest e.g. with *Eucalyptus tereticornis*, *E. longifolia*, *E. eugenioides*, *Melaleuca decora* (M. Robinson pers. comm.).

Substrate: Sandstone outcrops and occasionally on poorly drained Wianamatta Shale and Tertiary alluvium. Low–medium nutrient soils, periodically poorly-drained.

Exposure:

Conservation

Conservation: A widespread coastal species, though Illawarra coastal plain habitats are not conserved (M. Robinson pers. comm.).

Kunzea cambagei

MYRTACEAE

Life history**Growth form:** Low spreading shrub; young stems silky.**Vegetative spread:** Evidently capable of limited vegetative spread by rooting along stems.**Longevity:****Primary juvenile period:****Flowers:** Cream to yellowish, October–November.**Fruit/seed:** Indehiscent capsule 3 mm long, with one seed, matures and drops off in January.**Dispersal, establishment & growth:** Diaspore: fruit**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CT CWS.**Distribution Sydney area:** Western Blue Mountains.**Select locations:** CT: Mt Werong, West Berrima, Wanganderry Plateau.**Habitat****Habitat:** Plateau.**Altitude:** 600–1200 m **Annual rainfall:** 900–1000 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Wet heath e.g. with *Eucalyptus stricta*, *Banksia marginata*, *Hakea dactyloides*, *Acacia terminalis* (Mt Werong); woodland e.g. with *Eucalyptus sclerophylla*, *Hakea constablei* (Wanganderry).**Substrate:** Coarse sandy soil on sandstone, quartzite, low nutrient soils.**Exposure:** Full sun.**Conservation****Conservation:** Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 2VCa on national rare species list (Briggs & Leigh 1996). Some populations are within Blue Mountains N.P.

Kunzea capitata

MYRTACEAE

Life history

Growth form: Erect or ascending shrub to 1.5 m high, often shorter and spindly; young stems usually covered with hairs.

Vegetative spread: No.

Longevity: More than 60 years (D. Keith pers. comm.).

Primary juvenile period:

Flowers: Pink to purple, sometimes white, in head-like clusters, September–November.

Fruit/seed: Dehiscent capsule 3–4.5 mm long, with many seeds.

Dispersal, establishment & growth: Diaspore: seed, no special morphology for dispersal (Westoby et al. 1990).

Recruitment mainly after fire; non-dormant fraction of total seed crop 36%; fire temperature more than 60°C for maximum germination (D. Keith pers. comm.).

Fire response: Resprouts from base (D. Keith pers. comm.) (Benson 1981) but many plants killed after high intensity fire (1/1994) at Lane Cove and Narrabeen Lake; secondary juvenile period less than 2 yrs (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST.

Distribution Sydney area: Widespread on coast and adjacent ranges.

Select locations: CC: Brisbane Water NP, North Head, Maroota, Londonderry, Agnes Banks, Avon Dam, Wanganderry. CT: Mt Victoria, Katoomba, Kings Tableland, Hill Top, Carrington Falls.

Habitat

Habitat: Ridges.

Altitude: 0–1000 m **Annual rainfall:** 700–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Heath e.g. with *Eucalyptus stricta*, *Allocasuarina nana*; woodland and open-forest e.g. with *Eucalyptus sieberi*, *E. piperita*, *Corymbia gummifera* and sclerophyllous shrubs.

Substrate: Shallow sandy soil on sandstone and rock outcrops, low nutrients.

Exposure: Full sun to light shade.

Conservation

Conservation: Widespread and probably adequately conserved.

Kunzea ericoides

MYRTACEAE

Burgan

Life history

Growth form: Tall shrub or tree to 5 m high, with hairy young stems. A very diverse species in terms of habit, leaf shape indumentum and branching (Harden 1991).

Vegetative spread:

Longevity: More than 70 years (in N.Z., Allen et al. 1992).

Primary juvenile period: 2 years (Harris 1996).

Flowers: White, spring–summer. Jewel Beetles *Cisseis vicina*, *Stigmodera maculata*, *S. variabilis*, *S. sexplagiata*, *S. cruenta*, *S. octospilota*, *S. erythroptera*, *S. luteipennis*, *S. nasuta*, *S. decemmaculata*, *S. rufipennis*, *S. spinolae*, *S. subprura*, *Torresita cuprifera* collected from flowers (Hawkeswood 1978).

Fruit/seed: Dehiscent capsule, 4 mm diam., with many seeds. Seed weight 0.1 mg, shed April–July (Kirschbaum & Williams 1991). No soil-stored seedbank (Allen et al. 1992).

Dispersal, establishment & growth: Diaspore: seed. Apparently a colonising species, reported to germinate abundantly after clearing. Wind-dispersed locally by wind, or further afield by water (Kirschbaum & Williams 1991).

Fire response: Resprouts from lignotuber (at Tidbinbilla Valley, Kirschbaum & Williams 1991).

Interaction with other organisms: Foodplant of the moth caterpillar *Catamola thyrisalis* (Coupar & Coupar 1992). Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993). Gall, scale and other insects attack stems; mature plants unpalatable to stock (Kirschbaum & Williams 1991).

Status/origin: Native. Botanical subregions: SC NT CT ST CWS SWS; Qld, Vic., S.A., N.Z. Distribution Sydney area: Tablelands. Select locations: CT: Ophir (near Orange), Burruga.	Distribution
Habitat: Often near creeks. Altitude: 800–1000 m Annual rainfall: 800–1000 mm Typical local abundance: Frequent. Vegetation: Eucalypt open-forest or heath, replacing the short-lived <i>Cassinia arcuata</i> . Substrate: Shale, colluvium, alluvium, along drainage lines. Exposure:	Habitat
Conservation: Conservation status unknown.	Conservation

Kunzea parvifolia

MYRTACEAE

Growth form: Shrub to 1.5 m high, with hairy young stems. Vegetative spread: Longevity: Primary juvenile period: Flowers: Pink to purple, rarely white, October–December. Fruit/seed: Dehiscent capsule 2.5 mm diam., with many seeds. Dispersal, establishment & growth: Diaspore: seed, may colonise open sites. Fire response: Interaction with other organisms:	Life history
Status/origin: Native. Botanical subregions: CC SC NT CT ST NWS CWS SWS; Vic. Distribution Sydney area: Mainly Southern Highlands. Select locations: CC: Menangle (1894) CT: Boyd Plateau, Medway, Penrose, Marulan.	Distribution
Habitat: Altitude: 600–1100 m Annual rainfall: 900–1000 mm Typical local abundance: Frequent–occasional. Vegetation: Eucalypt open-forest e.g. with <i>Eucalyptus sclerophylla</i> , <i>E. agglomerata</i> ; or heath e.g. with <i>Leptospermum juniperinum</i> , <i>L. lanigerum</i> . Substrate: Sandy clay loam on sandstone, low nutrients, well-drained. Exposure:	Habitat
Conservation: Conservation status unknown.	Conservation

Kunzea rupestris

MYRTACEAE

Life history**Growth form:** Spreading shrub with compact foliage to 2 m high.**Vegetative spread:** May form root-suckers.**Longevity:** Plants appear to be very old at Yeomans Bay (L.McD.), but there is no indication of age.**Primary juvenile period:****Flowers:** White, September–October.**Fruit/seed:** Indehiscent capsule 4–5 mm long, with one seed, shed at maturity, November.**Dispersal, establishment & growth:** Diaspore: fruit. Seed dispersal local, probably soil-stored seedbank, dormancy potential unknown. Potential for population recruitment from seed (and hence the maintenance for genetic variability) very low (Peter G. Wilson, pers. comm.). Frequent die-back, possibly drought related and resprouting from very old wood at Yeomans Bay (L.McD.).**Fire response:** Large proportion of population at Yeomans Bay entirely burnt in high intensity fire (1/94) some plants resprouted from base and trunk, small number of seedlings established (L.McD. 6/96).**Interaction with other organisms:**

Distribution**Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Maroota to Ku-ring-gai Chase.**Select locations:** CC: North Sackville, Maroota, Canoelands Ridge (1929), West Head at Yeomans Bay (KCNP).

Habitat**Habitat:** Sandstone rock platforms.**Altitude:** 50–300 m **Annual rainfall:** 900–1200 mm**Typical local abundance:** Frequent.**Vegetation:** Open scrub e.g. with *Baeckea brevifolia*, *Angophora hispida* sometimes with *Darwinia fascicularis* subsp. *oligantha*.**Substrate:** Shallow sandy soil in depressions on sandstone rock platforms, low nutrients. Moisture supply conserved by moss and lichen which covers the soil — drainage minimal; however, periods of drought would result in periods of no moisture supply in the shallow depressions (L.McD.).**Exposure:** Light shade to full sun, indifferent to exposure.

Conservation**Conservation:** Local endemic species, poorly known, coded 2VCi on national rare species list (Briggs & Leigh 1996). Listed as Endangered (schedule 1) under NSW *Threatened Species Conservation Act 1995*. Largest conserved population Yeomans Bay KCNP (L.McD. 4.92). Recent searches at Canoelands (1985–86) have been unsuccessful (Peter Wilson R.B.G.). Population at Maroota, not conserved.***Kunzea* species E**

MYRTACEAE

Life history**Growth form:** Erect shrub 1–2 m high, with hairy young stems.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Cream, November.**Fruit/seed:** Capsule 4–5 mm long, with many seeds.**Dispersal, establishment & growth:** Diaspore: seed**Fire response:****Interaction with other organisms:**

Distribution**Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Yerranderie to Kanangra.**Select locations:** CC: Kanangra Walls, Bulga Ridge, Mt Cookem.

	Habitat
Habitat: Cliff edges.	
Altitude: 500–1200 m	Annual rainfall: 900–1000 mm
Typical local abundance: Frequent.	
Vegetation: Eucalypt open-forest e.g. with <i>Angophora costata</i> , <i>Eucalyptus punctata</i> , <i>E. sieberi</i> , <i>E. sparsifolia</i> .	
Substrate: Skeletal soils on sediments.	
Exposure:	
	Conservation
Conservation: Local endemic species, poorly known.	

Leptospermum arachnoides**MYRTACEAE**

	Life history
Growth form: Much branched shrub, often almost prostrate but frequently erect and sometimes 2 m high; bark rough peeling in flaky layers (Thompson 1989).	
Vegetative spread: No.	
Longevity: More than 60 years (D. Keith pers. comm.).	
Primary juvenile period:	
Flowers: White, October–March, peak December. Probably pollinated by native bees, wasps flies and honeybees; flowering may be suppressed during long periods without fire (Kubiak pers. comm.).	
Fruit/seed: Capsule 5–8 mm diam., retained on plant; seeds 2 mm long.	
Dispersal, establishment & growth: Recruitment mainly after fire (D. Keith pers. comm.).	
Fire response: Resprouts from base (D. Keith pers. comm.). Secondary juvenile period less than 2.5 yrs (P. Kubiak pers. comm.).	
Interaction with other organisms:	
	Distribution
Status/origin: Native.	
Botanical subregions: NC CC SC NT CT ST NWS CWS; Qld.	
Distribution Sydney area: Coast and Blue Mountains.	
Select locations: CC: Putty, Castle Hill, West Head, Galston, Cheltenham, Seaforth, La Perouse, Oatley, Heathcote, Sublime Point, Bombaderry. CT: Rylstone, Ben Bullen, Newnes Plateau, Clarence, Mt Tomah, Hill Top.	
	Habitat
Habitat: Ridgetop, sandstone outcrops.	
Altitude: 0–1000 m	Annual rainfall: 900–1400 mm
Typical local abundance: Frequent.	
Vegetation: Moist heath e.g. with <i>Banksia oblongifolia</i> , <i>B. paludosa</i> , <i>Hakea teretifolia</i> , <i>Isopogon anemonifolia</i> ; woodland e.g. with <i>Eucalyptus sclerophylla</i> , <i>Angophora bakeri</i> ; or forest.	
Substrate: Shallow soils on sandstone.	
Exposure: Sites often exposed, full sun.	
	Conservation
Conservation: Probably adequately conserved.	

Leptospermum blakelyi

MYRTACEAE

Life history**Growth form:** Spreading shrub 1 m high, with bark shed in slender strips**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White or pink, November–January.**Fruit/seed:** Capsule 2–4 mm diam., may be held on plant until following November.**Dispersal, establishment & growth:** Diaspore: seed, gravity-dispersed locally.**Fire response:** Probably resprouts (P. Hind pers. comm.).**Interaction with other organisms:**

Distribution**Status/origin:** Native.**Botanical subregions:** CT.**Distribution Sydney area:** Lithgow area.**Select locations:** CT: Marrangaroo Creek, Farmers Creek, Lithgow, Hassans Walls, Shipley.

Habitat**Habitat:** Sandstone escarpments.**Altitude:** 900–1100 m **Annual rainfall:** 900–1100 mm**Typical local abundance:** Frequent.**Vegetation:** Heath e.g. with *Allocasuarina nana*, *Leptospermum trinervium*, *Kunzea capitata*, *Eucalyptus stricta*, *Banksia ericifolia*. Some sites have alternating contour bands of heath and rock (Farmer Creek headwaters).**Substrate:** Shallow soil on sandstone, low nutrients.**Exposure:**

Conservation**Conservation:** Local endemic coded 2R on national rare species list (Briggs & Leigh 1996), conservation status unknown.***Leptospermum brevipes***

MYRTACEAE

Life history**Growth form:** Spreading shrub or small tree to 4 m, with close bark.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White, April.**Fruit/seed:** Capsule 3–4 mm diam., with seeds 1 mm long, shed at maturity.**Dispersal, establishment & growth:** Diaspore: fruit.**Fire response:****Interaction with other organisms:**

Distribution**Status/origin:** Native.**Botanical subregions:** NC SC NT CT ST NWS SWS NWP; Qld, Vic.**Distribution Sydney area:****Select locations:** CT: Winburndale NR, Mt Gibraltar.

Habitat**Habitat:** Rocky outcrops, rocky hillsides.**Altitude:** 800–1000 m **Annual rainfall:** 800–1000 mm**Typical local abundance:** Frequent.**Vegetation:** Open-forest in damp places.**Substrate:** Sandy soils on granite, microsyenite, low nutrients.**Exposure:**

Conservation**Conservation:** Rare on Central Tablelands (Thompson 1989), conservation status unknown.

Leptospermum continentale

MYRTACEAE

Prickly Teatree

Life history

Growth form: Straggling slender shrub, occasionally tree-like 1–4 m high, with close firm bark which may peel in flaky strips from very old plants (Thompson 1989).

Vegetative spread: No.

Longevity: More than 60 years (D. Keith pers. comm.).

Primary juvenile period:

Flowers: White or rarely pink, October–January. Populations flower for approximately 5 weeks; pollinated by members of the Diptera and Hymenoptera (O'Brien & Calder 1993). Both male flowers and bisexual flowers, with male flowers continuing to flower and produce nectar, attracting pollinators to the plant after pollen donation complete (O'Brien 1994).

Fruit/seed: Capsule 6–7 mm, with seeds 2–3 mm long, retained on plant as canopy-stored seedbank.

Dispersal, establishment & growth: Recruitment mainly after fire (D. Keith pers. comm.). Seedlings not seen until 2 years after fire (at Angahook-Lorne State Park (Woark 1997).

Fire response: Resprouts from base, secondary juvenile period 2 years (D. Keith pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST CWS SWS; Vic., S.A.

Distribution Sydney area: Widespread.

Select locations: CC: Rose Bay (1900), Kogarah (1893), Camden, Warumbul, Maddens Plains, Gerringong Creek. CT: Kandos, Ilford, Hill End, Newnes SF, Bell, Kanangra, Mittagong, Wombeyan Caves.

Habitat

Habitat: Forest or open sandy swamps.

Altitude: 0–1000 m **Annual rainfall:** 800–1200 mm

Typical local abundance: Frequent.

Vegetation: Open-forest e.g. with *Eucalyptus mannifera*; heath and scrub e.g. with *Banksia ericifolia*, *Hakea dactyloides*; and shrubswamp e.g. with *Banksia robur*, *Gleichenia dicarpa*, *Lepidosperma limicola*.

Substrate: Sandy soil on sandstone, low nutrients.

Exposure: Light shade to full sun.

Conservation

Conservation: Likely to be adequately conserved.

Leptospermum deanei

MYRTACEAE

Life history**Growth form:** Erect shrub to 5 m high, with bark shedding in long strips.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White, October–November.**Fruit/seed:** Capsules 3.5 mm diam., with seeds 1–1.5 mm long, shed immediately at maturity, November–December.**Dispersal, establishment & growth:****Fire response:** Probably killed.**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Pennant Hills Park, Garigal NP, Marramarra NP.**Select locations:** CC: Marramarra Creek, Galston Gorge, Pennant Hills Park (Devlins Creek), upper Middle Harbour Creek.**Habitat****Habitat:** Woodland on lower hill slopes or near creeks. Creekbanks only in Garigal NP (L.McD.).**Altitude:** 0–50 m**Annual rainfall:** 1000–1100 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Riparian scrub e.g. with *Tristaniopsis laurina*, *Baeckea myrtifolia*; woodland e.g. with *Eucalyptus haemastoma*; open-forest e.g. with *Angophora costata*, *Leptospermum trinervium*, *Banksia ericifolia*.**Substrate:** Sandy alluvial soil or sand over sandstone, low nutrients.**Exposure:****Conservation****Conservation:** Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 2V on national rare species list (Briggs & Leigh 1996), the most substantial known population is on Bare Creek/Middle Harbour Creek in Garigal NP, one plant seen in Marramarra Creek (L.McD.). Most of its creek habitats are near suburban areas and vulnerable to invasion by exotic weeds.***Leptospermum emarginatum***

MYRTACEAE

Life history**Growth form:** Shrub to 4 m high with irregular, rough bark; leaves aromatic.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White, November–January, peak December.**Fruit/seed:** Woody capsule 3.5–5 mm diam.**Dispersal, establishment & growth:** Diaspore: seed.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT; Vic.**Distribution Sydney area:** Nepean River, Nattai River.**Select locations:** CC: Burrellow Creek, Nepean River (near Penrith), Cobbitty, Glenbrook Creek, Nattai River (near Hill Top).

Habitat

Habitat: Riverbanks and rocky creeks.

Altitude: 0–50 m **Annual rainfall:** 900–1000 mm

Typical local abundance: Occasional.

Vegetation: Riparian scrub e.g. with *Tristaniopsis laurina*, *Austromyrtus tenuifolia*, *Tristania neriifolia*, *Leptospermum polygalifolium*, *Lomatia myricoides*.

Substrate: Rocky creekbanks and boulders, sandy alluvium on sandstone, low nutrients, subject to periodic flood inundation for short periods.

Exposure:

Conservation

Conservation: Grose Vale is northern geographical limit, conservation status unknown.

No recent records for the Nepean River except above Menangle (Benson & Howell 1993).

Leptospermum epacroides**MYRTACEAE****Life history**

Growth form: Shrub usually 1–2 m high with smooth firm bark; leaves aromatic.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White or pink, February–March.

Fruit/seed: Woody capsule 6–8 mm diam., with seeds 2 mm long, retained on plant for long period as canopy-stored seedbank.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC.

Distribution Sydney area: Illawarra Coast, but mostly Jervis Bay.

Select locations: Austinmer (1933).

Habitat

Habitat: Heath and dry sclerophyll forests.

Altitude: 0–100 m **Annual rainfall:** 1600 mm

Typical local abundance:

Vegetation: Moist heath; eucalypt open-forest.

Substrate: Sandy soil on sandstone, low nutrients, poorly-drained.

Exposure:

Conservation

Conservation: Rare, coded 2RC- on national rare species list (Briggs & Leigh 1996).

Mainly confined to Jervis Bay. Austinmer is northern geographical limit, but has not been recorded there since 1933 despite recent searches (Thompson 1989).

Leptospermum grandifolium

MYRTACEAE

Woolly Teatree

Life history

Growth form: Erect shrub 1.5 m or small tree to more than 6 m high, with smooth exfoliating bark that tends to remain about the stems. Leaf-form variable in different parts of its range and different habitats.

Vegetative spread: No.

Longevity: More than 60 years (D. Keith pers. comm.).

Primary juvenile period:

Flowers: White, October–January, peak November.

Fruit/seed: Capsule up to 12 mm diam. with curved seeds 2 mm long, retained on plant, some fruit retained until next flowering.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by gravity and wind, recruitment mainly after fire (D. Keith pers. comm.).

Fire response: Resprouts, secondary juvenile period 3 years (D. Keith pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC CT ST; Vic.

Distribution Sydney area: Widespread, coast–upper Blue Mountains.

Select locations: CC: Hornsby, Narrabeen, Mosman, Royal NP, Maddens Plains, Castle Hill CT: Mt Wilson, Lawson, Kanangra, Mt Werong, Newnes Plateau, Ilford, Wingecarribee Swamp, Wingello.

Habitat

Habitat: Creek edges, sandy swamps.

Altitude: 0–1100 m **Annual rainfall:** 900–1200 mm

Typical local abundance: Frequent.

Vegetation: Scrub e.g. with *Leptospermum myrtifolium*, *L. obovatum* and sedges; heath e.g. with *Eucalyptus stricta*; riparian scrub e.g. with *Callicoma serratifolia*, *Lomatia myricoides*, *Austromyrtus tenuifolia*, *Leptospermum polygalifolium*.

Substrate: Sandy or peaty soil on sandstone, low nutrients.

Exposure: Full sun–light shade.

Conservation

Conservation: Probably adequately conserved.

Leptospermum juniperinum

MYRTACEAE

Life history

Growth form: Erect compact shrub to 2–3 m high with close bark.

Vegetative spread: No.

Longevity: More than 60 years (D. Keith pers. comm.).

Primary juvenile period: Primary juvenile period more than 7 years (D. Keith pers. comm.).

Flowers: White, irregular flowering, peak November–December. Andromonoecious (Andersen 1990). Insect-pollinated (Webb 1986).

Fruit/seed: Woody capsule 6–8 m diam.; seeds 2 mm long, retained on plant for up to 12 months as canopy-stored seedbank.

Dispersal, establishment & growth: Diaspore: seed, no special morphology for dispersal (Westoby et al. 1990), dispersed locally by gravity or wind. Ant-dispersed (at Wilsons Promontary, Andersen & Ashton 1985). Seeds germinate readily in moist sites. Recruitment episodic mainly after fire (D. Keith pers. comm.).

Fire response: Resprouts from epicormic buds (Myerscough et al. 1995), secondary juvenile period 2 years (D. Keith pers. comm.). Resprouts within one month after high intensity fire (1/1994) at Salvation Creek (L.McD.).

Interaction with other organisms:

	Distribution
Status/origin: Native.	
Botanical subregions: NC CC SC CT ST; Qld.	
Distribution Sydney area: Coast and Blue Mountains.	
Select locations: CC: Brisbane Water NP, Narrabeen, Manly, Long Bay, Centennial Park (1898), Bulli, Shellharbour, Jamberoo, Bilpin, Mt Wilson, Blackheath, Robertson, Penrose.	
	Habitat
Habitat: Swamps in sandstone country.	
Altitude: 0–1000 m Annual rainfall: 1000–1600 mm	
Typical local abundance: Frequent–dominant.	
Vegetation: Wet heath and scrub e.g. with <i>Leptospermum squarrosus</i> , <i>L. obovatum</i> , <i>Hakea teretifolia</i> , <i>Banksia ericifolia</i> , <i>Banksia robur</i> ; margin of sedgeland.	
Substrate: Sandy peaty soils on sandstone, poorly-drained sites, low nutrient soils.	
Exposure: Full sun.	
	Conservation
Conservation: Probably adequately conserved e.g. Brisbane Water NP, Blue Mountains NP.	

Leptospermum laevigatum**MYRTACEAE**

Coast Teatree

	Life history
Growth form: Shrub or small tree to 4 m high, with close bark that sheds in strips.	
Vegetative spread: No.	
Longevity: 30–50 years (plants 35 years old dying naturally at Lion Is). 100–150 years (in Victoria, Burrell 1981).	
Primary juvenile period: 5 years (Burrell 1981).	
Flowers: White, August–October. Mass flowering in September, a few single flowers present over a much longer period (P. Adam pers. comm.).	
Fruit/seed: Woody capsule 7–8 mm diam., with small seeds shed at maturity, not retained on plant.	
Dispersal, establishment & growth: Wind-dispersed short distance, possibly ant-dispersed (Hazard & Parsons 1977). Probably has a soil-stored seedbank. Seeds germinated within 2 weeks at 25°C (Hazard & Parsons 1977). Good germination and survival in rehabilitation programs (Temple & Bungey 1980).	
Fire response: Killed, re-establish from ?soil-stored seed.	
Interaction with other organisms: Insects predate seeds (Andersen 1989). Ringtail Possum <i>Pseudocheirus peregrinus</i> feeds on flowers (How et al. 1984). Roots infected by mycorrhizal fungi (Burrell 1981).	

	Distribution
Status/origin: Native, widely planted.	
Botanical subregions: NC CC SC; *Qld, Vic., Tas., SA, *W.A.	
Distribution Sydney area: Coastline.	
Select locations: CC: Norah Head, McMasters Beach, Mona Vale, Manly, Bondi, Maroubra, Lady Robinsons Beach, Cronulla, Stanwell Park, Shellharbour, Gerringong.	
	Habitat
Habitat: Coastal sand dunes cliffs and headlands.	
Altitude: 0–100 m Annual rainfall: 1200–1600 mm	
Typical local abundance: Dominant–frequent.	
Vegetation: Coastal scrub often forms dense monospecific stands or with <i>Acacia sophorae</i> , <i>Banksia integrifolia</i> , <i>Leucopogon parviflorus</i> , and heath e.g. with <i>Melaleuca nodosa</i> , <i>Allocasuarina distyla</i> .	
Substrate: Sand dunes and sandy soil on sandstone, well-drained, low nutrients. Soil usually not saline (P. Adam pers. comm.).	
Exposure: Full sun, exposed to salt spray (P. Adam pers. comm.).	
	Conservation

Conservation: Conservation status not known, coastal habitat extensively disturbed and natural populations very reduced, though plantings have been made in landscaped areas. Spreading into Garigal NP at Belrose from planted shrubs at electricity substation (L.McD.). Spreading from plantings along Southern Freeway (M. Robinson pers. comm.). Some stands entirely introduced (e.g. on parts of North Coast, P. Adam pers. comm.).

Leptospermum lanigerum

MYRTACEAE

Woolly Teatree

Life history

Growth form: Shrub to more than 5 m high or small tree with smooth bark; young growth hairy.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, December–January. Andromonoecious (Andersen 1990). Insect-pollinated (Webb 1988b).

Fruit/seed: Woody capsule 5–10 mm diam., with seeds 2.5 mm long. Retained on plant as canopy-stored seedbank. Dehiscing about a year after flowering (Andersen 1989).

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: SC CT ST; Vic., Tas., S.A.

Distribution Sydney area: Southern edge of Sydney area.

Select locations: CC: Jamberoo Pass, Wombeyan Caves, Taralga.

Habitat

Habitat: Along watercourses, sandy swamps.

Altitude: 600–900 m **Annual rainfall:** 700–1400 mm

Typical local abundance: Rare.

Vegetation: Eucalypt woodland e.g. with *Banksia* understorey.

Substrate: Clay soils on alluvium.

Exposure:

Conservation

Conservation: Wombeyan Caves is northern geographical limit, conservation status unknown.

Leptospermum macrocarpum

MYRTACEAE

Life history

Growth form: Low-growing shrub or to 2 m high, with close dense bark, gnarled.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: Greenish white, pink or dark red, October–December, peak October.

Fruit/seed: Capsule, 15–20 mm diam., seeds 5 mm long, retained on plant as canopy-stored seedbank.

Dispersal, establishment & growth: Diaspore: seed, gravity-dispersed locally, no dormancy.

Fire response: Resprouts from base (R. Lembit pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC CT.

Distribution Sydney area: Blue Mountains, Wollemi.

Select locations: CC: Culoul Range, Mountain Lagoon, Berambing, Woodford, Glen Davis.

CT: Mt Wilson, Bell, Clarence, Blackheath.

Habitat**Habitat:** Rocky, dry sites.**Altitude:** 0–1000 m**Annual rainfall:** 900–1400 mm**Typical local abundance:** Frequent.**Vegetation:** Open-forest e.g. with *Angophora costata*, *Syncarpia glomulifera*, *Leptospermum trinervium*.**Substrate:** Shallow sandy soil on sandstone, low nutrients, well-drained.**Exposure:** Exposed.**Conservation****Conservation:** Probably adequately conserved. Sites within Wollemi NP and Blue Mountains NP.***Leptospermum morrisonii*****MYRTACEAE****Life history****Growth form:** Bushy shrub or small tree 2–5 m high, with firm corrugated bark and strongly aromatic leaves.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White or greenish creamy white, December–January.**Fruit/seed:** Capsule 6–10 mm diam. curved seeds 2 mm long, retained on plant, some fruit retained until next flowering.**Dispersal, establishment & growth:** Diaspore: seed, dispersed locally by gravity and wind.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST.**Distribution Sydney area:** Widespread Woronora Plateau and Tablelands.**Select locations:** CC: Leumeah, Menangle, O'Hares Creek, Cataract River, Nepean Dam, Yerranderie CT: Capertee, Hassans Walls, Clarence, Leura, Kanangra, Nattai River, Mt Jellore, Robertson, Carrington Falls, Bundanoon, Wombeyan Caves.**Habitat****Habitat:** Rocky escarpments, hill slopes, rocky creekbanks.**Altitude:** 0–1000 m**Annual rainfall:** 800–1600 mm**Typical local abundance:** Frequent.**Vegetation:** Woodland e.g. with *Angophora costata*, *Eucalyptus piperita*; heath e.g. with *Allocasuarina nana*, *Leptospermum arachnoides*, *Banksia ericifolia*; riparian e.g. with *Leptospermum polygalifolium*, *Tristaniopsis laurina*, *Hakea salicifolia*.**Substrate:** Sandy soil and sandy alluvium, sandstone or rocky escarpments, colonising sandstone landslide talus.**Exposure:****Conservation****Conservation:** Probably adequately conserved, northern geographical limit is Capertee.

Leptospermum myrtifolium

MYRTACEAE

Life history

Growth form: Slender shrub 1–3 m high, with close bark forming flaky layers on old plants. Hybridises with *L. continentale* and *L. obovatum* (Thompson 1989).

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, mainly December–February. Insect-pollinated (Webb 1989b).

Fruit/seed: Capsule 5–6 mm diam. with curved seeds 2 mm long, retained on plant and gradually.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT ST; Vic.

Distribution Sydney area: Tablelands.

Select locations: CT: Newnes Plateau, Hartley Valley, Boyd Plateau, Hill End, Mullions Creek, Mt Canobolas, Wombeyan Caves, Mittagong, Paddys River.

Habitat

Habitat: High altitude swamps, occasionally on rocky creekbanks.

Altitude: 600–1200 m

Annual rainfall: 1000–1200 mm

Typical local abundance: Frequent–occasional.

Vegetation: Woodland, scrub e.g. with *Leptospermum obovatum*, *L. grandifolium*, *Baeckea utilis*, *Grevillea acanthifolia* on swampy margins.

Substrate: Sandy, peaty soils on granite; volcanics, limestone, sandstone, low to medium nutrients, damp, poorly-drained sites.

Exposure: Full sun.

Conservation

Conservation: Conservation status unknown.

Leptospermum obovatum

MYRTACEAE

Life history

Growth form: Dense, erect shrub to 2 m high, with smooth, firm bark.

Vegetative spread: No.

Longevity: ?25–50 years.

Primary juvenile period:

Flowers: White, November–December.

Fruit/seed: Capsule 5–8 mm diam. with curved seeds 2 mm long, some retained on plant, some fruit retained for up to 12 months.

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by gravity and wind.

Fire response: Resprouts from base of stem.

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST NWS; Vic.

Distribution Sydney area: Blue Mountains.

Select locations: CC: Springwood, Nattai River. CT: Olinda, Clarence, Lithgow, Boyd Plateau, Mt Werong, Yerranderie, Kowmung River, Hilltop, Paddys River, Bundanoon, Penrose.

Habitat

Habitat: Swampy places, or on edges of swiftly-flowing streams.

Altitude: 0–1200 m **Annual rainfall:** 1000–1200 mm

Typical local abundance: Frequent–dominant.

Vegetation: Open-woodland e.g. with *Eucalyptus mannifera*, *Eucalyptus radiata*, *E. pauciflora*, *Hakea dactyloides*; scrub e.g. with *Leptospermum myrtifolium*, *L. polygalifolium*, *Carex appressa*.

Substrate: Sandy, organic soils on sandstone, granite, quartzite, low nutrients, permanently moist.

Exposure: Full sun.

Conservation

Conservation: Probably adequately conserved.

Leptospermum parvifolium**MYRTACEAE****Life history**

Growth form: Shrub to 2 m high with flaky bark.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White or pink, August–November. Probably mainly pollinated by native bees, flies and bugs with wasps, beetles, honeybees and small butterflies playing a role (P. Kubiak pers. comm.).

Fruit/seed: Semi globular woody capsule 4 mm diam., with very small seeds. Fruit shed by following August–September.

Dispersal, establishment & growth: Diaspore: seed, germinates without treatment, no soil-stored seedbank. May colonise scraped sites.

Fire response: Resprouted from base after high intensity fire (1/1994) at Lane Cove; secondary juvenile period less than 4 yrs (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC NT CT NWS CWS NWP.

Distribution Sydney area: Widespread.

Select locations: CC: Woy Woy, Dural, Frenchs Forest, Genfield, Bilpin, Springwood, St Marys, Bargo, Barrengarry. CT: Kandos, Capertee, Newnes Plateau, Clarence, Blackheath, Wentworth Falls.

Habitat

Habitat:

Altitude: 0–1200 m **Annual rainfall:** 800–1200 mm

Typical local abundance: Frequent–occasional.

Vegetation: Eucalypt open-forest and woodland e.g. with *Angophora bakeri*, *Corymbia eximia*, *Eucalyptus parramattensis*, *E. sclerophylla*, *Melaleuca decora*, *Melaleuca nodosa*; scrub e.g. with *Eucalyptus stricta*, *Petrophile pulchella*, *Leptospermum trinervium*; heath e.g. with *Angophora hispida*, *Banksia ericifolia*, *Grevillea buxifolia*.

Substrate: Sandy soil on sandstone, clay soil on Tertiary alluvium, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Probably adequately conserved. Conserved in Western Sydney (Benson & McDougall 1991).

Leptospermum petraeum

MYRTACEAE

Life history

Growth form: Spreading rigid shrub to 3 m high, with bark flaking in strips; leaves aromatic (Thompson 1989).

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, February–May.

Fruit/seed: Capsule 7–8 mm diam., seed 2 mm long, retained on plant for some time, ?possibly 2 seasons, as canopy-stored seedbank.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT.

Distribution Sydney area: Kanangra-Boyd NP

Select locations: CT: Blackheath (1923), Kanangra Walls.

Habitat

Habitat: Broad exposed rocky ridgetops.

Altitude: 1200 m

Annual rainfall: 1100 mm

Typical local abundance: Frequent.

Vegetation: Shrubby heath e.g. with *Eucalyptus stricta*, *Baeckea brevifolia*, *Hakea dactyloides*.

Substrate: Shallow sandy loam over sandstone and granite, low nutrients.

Exposure: Exposed, full sun.

Conservation

Conservation: Coded 2RC- on national rare species list (Briggs & Leigh 1996).

Leptospermum polyanthum

MYRTACEAE

Life history

Growth form: Spreading shrub or small tree to 5 m high, often with pendulous habit; bark somewhat flaking (Thompson 1989).

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, October–January.

Fruit/seed: Capsule 3 mm diam., with seeds 1 mm long, seeds gradually shed until next flowering (Thompson 1989).

Dispersal, establishment & growth: Diaspore: seed, dispersed locally by wind and gravity.

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC NT CT NWS CWS.

Distribution Sydney area: Blue Mountains.

Select locations: CC: Lower Portland, Douglas Park, Bargo Megalong Valley. CT: Currant Mountain Gap, Lidsdale, Clarence, Kanangra Walls, Mt Werong, Mt Victoria, Wentworth Falls, Wombeyan Caves.

Habitat

Habitat: Rocky situations in rocky gullies or on stream banks.

Altitude: 0–1000 m **Annual rainfall:** 900–1400 mm

Typical local abundance: Frequent.

Vegetation: Open-forest e.g. with *Eucalyptus sieberi*, *E. piperita*, *E. sclerophylla*, *E. radiata*; *Eucalyptus punctata*, *E. tenella* (on granite); heath e.g. with *Allocasuarina nana*, *Banksia ericifolia*.

Substrate: Sandy soil on sandstone, granite, metamorphic rocks, low nutrients, well-drained.

Exposure:

Conservation

Conservation: Wombeyan Caves is southern geographical limit. Conservation status not known but probably adequate.

Leptospermum polygalifolium* subsp. *cismontanum**MYRTACEAE****Life history**

Growth form: Shrub or tree 1–4 m high, with smooth firm bark; leaves sometimes aromatic.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, September.

Fruit/seed: Woody capsule 5–7 mm diam. with seeds 1.5–3 mm long, retained on plant for some time?

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld.

Distribution Sydney area: Bucketty to Killcare.

Select locations: CC: Bucketty, Calga, Mooney Mooney Creek, Kincumber, Woy Woy, Killcare.

Habitat

Habitat:

Altitude: 0–300 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Frequent.

Vegetation: Open-forest e.g. with *Corymbia gummifera*, *C. eximia*, *Angophora hispida*, *Acacia oxycedrus*, *Acacia myrtifolia*; occasional on edge of coastal rainforest.

Substrate: Sandy soil on sandstone, sand dunes, low nutrients, well-drained.

Exposure:

Conservation

Conservation: Conservation status unknown.

Leptospermum polygalifolium* subsp. *polygalifolium

MYRTACEAE

Life history**Growth form:** Shrub to 4 m high, with hard bark and multiple stems.**Vegetative spread:** No.**Longevity:** More than 60 years (D. Keith pers. comm.).**Primary juvenile period:****Flowers:** White, October–December, peak November–December. Pollinated by many species of beetles predominantly Buprestidae family (Hawkeswood 1987a), probably pollinated by native bees, honeybees, flies, wasps and butterflies (P. Kubiak pers. comm.). Insects collected from flowers: bees, sphecid wasps, pompilid wasps, ants, day moths (Amatidae), bugs (Hemiptera, Reduviidae), robber-flies (Asilidae), beetles (Buprestidae, Cantharidae, Chrysomelidae, Cleridae, Elateridae, Lycidae, Mordellidae, Scarabaeidae) (for species see Hawkeswood 1978).**Fruit/seed:** Woody capsule 6–10 mm diam., retained on plant for at least a year. Seed released from woody capsule when branch dies.**Dispersal, establishment & growth:** Diaspore: seed, no special morphology (Westoby et al. 1990). No soil-stored seedbank. Recruitment mainly after fire (D. Keith p.c.). Coloniser of open sites.**Fire response:** Stems killed resprouts from base (D. Keith, Benson 1981, Fox 1988).

Resprouts from base, after high intensity fire 1/94 (at Deep Creek Garigal NP, L.McD.).

Secondary juvenile period less than 3 yrs (P. Kubiak pers. comm.).

Interaction with other organisms: Jewel beetles *Curis caloptera*, *Stigmodera tricolor*, *S. producta* and *Neocuris guerini* observed on flowers; soldier beetle *Chauliognathus curvipes* feeds on flowers during summer (Hawkeswood 1987b). Seed eaten by Crimson Rosella *Platyercus elegans* (Lepschi 1993). Provides important support for nectar-dependent insects, particularly for some years after fire (P. Kubiak pers. comm.). Foodplant for larvae of moth *Epicoma contristis* (Common 1990), and adult beetle *Ethon bicolor* feeding on the floral parts (Hawkeswood & Turner 1992).**Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST.**Distribution Sydney area:** Widespread.**Select locations:** CC: Colo River, West Head, West Pymble, Nielsen Park, Berkshire Park, Springwood, Woolwash–Georges River, Yerrinbool, (Yallah, M.R.), Barrengarry. CT: Rylstone, Capertee, Blackheath, Kanangra Tops, Hill Top, Mittagong, Penrose.**Habitat****Habitat:** Riparian sites, watercourses, wet places.**Altitude:** 0–1100 m**Annual rainfall:** 700–1400 mm**Typical local abundance:** Frequent.**Vegetation:** Heath e.g. with *Kunzea ambigua*; or shrubby forest e.g. with *Eucalyptus piperita*, *Banksia serrata*, *Angophora costata*, *Tristaniopsis laurina*, *Acacia floribunda*, *Eucalyptus pauciflora*–*E. dives*–*E. sieberi* (at Clarence).**Substrate:** Moist sites, in deep sand or skeletal soil, usually on sandstone, but also on shale, infertile soil. Watertable mostly high, moisture supply intermittent, fresh.**Exposure:** Light shade–full sun.**Conservation****Conservation:** Widespread and probably adequately conserved e.g. Ku-ring-gai NP, Blue Mountains NP, Wollemi NP.

Leptospermum rotundifolium

MYRTACEAE

Life history

Growth form: Erect or spreading shrub to 2 m with hard bark.
Vegetative spread:
Longevity:
Primary juvenile period:
Flowers: White to purplish pink, October–December, peak November.
Fruit/seed: Capsule 8–15 mm diam., with seeds 4–5 mm long.
Dispersal, establishment & growth:
Fire response:
Interaction with other organisms:

Distribution

Status/origin: Native.
Botanical subregions: CC SC CT ST.
Distribution Sydney area: Woronora plateau.
Select locations: CC: Mt Kembla, Avon Dam, Bargo, Minnamurra Falls, Saddleback, Barren Grounds. CT: Macquarie Pass, Robertson, Belmore Falls, Penrose SF.

Habitat

Habitat: Rocky ridges.
Altitude: 0–700 m **Annual rainfall:** 1000–1800 mm
Typical local abundance: Frequent.
Vegetation: Eucalypt woodland and open-forest e.g. with *Eucalyptus sieberi*, *E. haemastoma*, *Banksia serrata*, *Leptospermum trinervium*.
Substrate: Skeletal sandy soils on sandstone, low nutrients, well-drained.
Exposure:

Conservation

Conservation: Probably adequately conserved, northern geographical limit is Mt Kembla.

Leptospermum rupicola

MYRTACEAE

Life history

Growth form: Shrub to 1 m high, with smooth firm bark.
Vegetative spread:
Longevity:
Primary juvenile period:
Flowers: White, March–May, September–October.
Fruit/seed: Woody capsule 6–10 mm diam., with seeds 2 mm long, persisting on plant.
Dispersal, establishment & growth: Diaspore: seed, shed from capsule after fire or death of stem. No soil-stored seedbank.
Fire response:
Interaction with other organisms:

Distribution

Status/origin: Native.
Botanical subregions: CC CT.
Distribution Sydney area: Mainly Upper Blue Mountains.
Select locations: CC: Glen Davis, Kangaroo Valley. CC: Blackheath, Katoomba, Narrow Neck, Berrima.

Habitat

Habitat: Moist cliffs and escarpments
Altitude: 500–1000 m **Annual rainfall:** 800–1400 mm
Typical local abundance: Frequent.
Vegetation: Shrubland, heathland e.g. with *Eucalyptus stricta*, *E. cunninghamii*, *E. oreades*, *Empodisma minus*, *Leptospermum polygalifolium*, *Dracophyllum secundum*.
Substrate: Shallow sandy soil on sandstone, low nutrients, moist sites.
Exposure:

Conservation

Conservation: Rare local endemic species, coded 3RC- on national rare species list (Briggs & Leigh 1996). A poorly-known species, some populations in the Upper Blue Mountains are within Blue Mountains NP but whether the species still survives in other areas is not known. Sites at Berrima, last collected 1901, Kangaroo Valley, last collected early this century (Benson 1990).

Leptospermum sejunctum

MYRTACEAE

Life history**Growth form:** Shrub 1–1.5 m high, with smooth grey bark.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Petals not seen.**Fruit/seed:** Woody capsule 8 mm diam., with seeds 2.5 mm long, persisting on plant.**Dispersal, establishment & growth:** Diaspore: seed, no soil-stored seedbank.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC.**Distribution Sydney area:** Confined to Nowra district.**Select locations:** CC: Bomaderry.**Habitat****Habitat:** Ridges.**Altitude:** 0–20 m**Annual rainfall:** 1400 mm**Typical local abundance:** Rare–frequent.**Vegetation:** Open-forest e.g. with *Corymbia maculata*, *C. gummifera*, *C. eximia*; scrub e.g. with *Eucalyptus langleyi*, *Leptospermum polygalifolium*, *Prostanthera incana*.**Substrate:** Sandy soil on sandstone, low nutrients, well-drained.**Exposure:****Conservation****Conservation:** Rare local endemic, coded 2K on national rare species list (Briggs & Leigh 1996), restricted to bush remnants very close to Nowra, none of which appear to be conserved, and may be vulnerable if not endangered (Benson 1990).***Leptospermum spectabile***

MYRTACEAE

Life history**Growth form:** Shrub to 3 m high, bark smooth and ultimately corrugated; young stems hairy.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Dark red, 2 cm diam., November–January.**Fruit/seed:** Woody capsule 9–12 mm diam., with small seeds.**Dispersal, establishment & growth:** Diaspore: seed.**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Colo River, between Capertee River and Upper Colo.**Select locations:** CC: Colo River.**Habitat****Habitat:** Riverbanks within sandstone gorge.**Altitude:** 0–140 m**Annual rainfall:** 900 mm**Typical local abundance:** Frequent, but localised.**Vegetation:** Riparian scrub e.g. with *Tristaniopsis laurina*, *Ceratopetalum apetalum*, *Lomatia myricoides*, *Leptospermum polygalifolia*.**Substrate:** Sandstone rocks with sandy alluvium inundated periodically by floods.**Exposure:****Conservation****Conservation:** Local endemic, coded 2RC- on national rare species list (Briggs & Leigh 1996). Much of habitat is within Wollemi NP, though weed invasion may pose threats in lower reaches of the river.

Leptospermum sphaerocarpum

MYRTACEAE

Life history

Growth form: Shrub to 2 m high often somewhat diffuse with hard bark, young stems hairy.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: Greenish white or pink, September–December, peak November.

Fruit/seed: Woody capsule ca. 10 mm diam., retained on plant for at least a year.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC CT NWS CWS.

Distribution Sydney area: Upper Blue Mountains.

Select locations: CC: Culoul Range. CT: Coricudgy, Charbon, Gospers Mountain, Newnes SF, Clarence, Blackheath.

Habitat

Habitat: Ridges.

Altitude: 500–1200 m

Annual rainfall: 900–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Open-forest e.g. with *Eucalyptus sclerophylla*, *E. sieberi*, *E. piperita*, *E. punctata*; heath e.g. with *Eucalyptus stricta*, *Allocasuarina nana*, *Banksia ericifolia*, *Banksia oblongifolia*.

Substrate: Shallow sand over sandstone, low nutrients.

Exposure:

Conservation

Conservation: Probably adequately conserved.

Leptospermum squarrosum

MYRTACEAE

Life history**Growth form:** Shrub 1-4 m high, with smooth firm bark.**Vegetative spread:** No.**Longevity:** 25–60 years (D. Keith pers. comm.).**Primary juvenile period:** Less than 9 years.**Flowers:** Flowers on short shoots on older branches, white or pink, at any time, peak March.**Fruit/seed:** Woody capsule 8–12 mm diam., with seeds 3–4 mm long, retained on plant as a canopy-stored seedbank.**Dispersal, establishment & growth:** Diaspore: seed, gravity-dispersed locally, no dormancy, no soil-stored seedbank. Recruitment mainly after fire (D. Keith pers. comm.).**Fire response:** Killed, re-establishes from seedlings.**Interaction with other organisms:** New Holland and White-cheeked Honeyeaters obtain nectar from flowers (Armstrong 1991).**Distribution****Status/origin:** Native.**Botanical subregions:** CC CT SC ST.**Distribution Sydney area:** Coast and Blue Mountains.**Select locations:** CC: Woy Woy, Bilpin, Hornsby, Cheltenham, Ingleside, Manly, Glenbrook, Kurnell, Bundeena, Thirlmere. CT: Newnes SF, Blackheath, Wentworth Falls, Hilltop, Robertson, Barren Grounds.**Habitat****Habitat:** Moist heath and shrubland.**Altitude:** 0–1000 m**Annual rainfall:** 1000–1800 mm**Typical local abundance:** Frequent.**Vegetation:** Shrubland e.g. with *Melaleuca nodosa*, *Leptospermum polygalifolium*, *L. arachnoides*, *Epacris microphylla*, *Banksia ericifolia*, *Grevillea buxifolia*; heath e.g. with *Allocasuarina nana*, *Banksia ericifolia*; open-forest e.g. with *Eucalyptus sieberi*.**Substrate:** Sandstone soils, sandy peaty soils, low nutrients, poorly-drained, continuous moisture.**Exposure:** Full sun.**Conservation****Conservation:** Widespread and probably adequately conserved.***Leptospermum trinervium***

MYRTACEAE

Life history**Growth form:** Flaky-barked shrub with ascending branches, to 4 m high. Leaf width variable; narrow-leaf and broad-leaf forms often recognisable but may grow together and flower at same time e.g. in Blue Mountains and Brisbane Water.**Vegetative spread:** No.**Longevity:** ?30–60 years, old single-stemmed plants may die suddenly.**Primary juvenile period:****Flowers:** Flowering mainly September–December peak October. Native bees, honeybees, flies and beetles are probably the most important pollinators, with wasps, butterflies, and moths also playing a role (P. Kubiak pers. comm., Webb 1986b).**Fruit/seed:** Capsule 3–6 mm diam., not retained on plant. Seeds 1.8 mm long, weight 0.3 mg (Drake 1981).**Dispersal, establishment & growth:** No special morphology for dispersal (Westoby et al. 1990). Soil-stored seedbank (Benwell 1998).**Fire response:** Foliage killed, resprouts from epicormic buds on thicker stems and basal shoots (Benson 1981, Fox 1988, Myerscough 1995, Morrison 1995). Some mature plants may be killed; others may begin to recover but die within 2 years. Resprouts from base within one month after high intensity fire (1/1994) at Ingleside (2.94), epicormic shoots flowering 5 months after high intensity fire (1/1994) at Mona Vale (L.McD.). Secondary juvenile period less than 1 year (P. Kubiak pers. comm.).

Interaction with other organisms: Provides important support for nectar-dependent insects in coastal bushland, particularly for some years after fire (P. Kubiak pers. comm.). Large numbers of Scarab Beetle *Liparetrus* sp. on flowers (Hawkeswood 1992c).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC NT CT CWS; Qld, Vic.

Distribution Sydney area: Widespread.

Select locations: CC: Morisset, Wyee, Putty, Hornsby, Frenchs Forest, Chatswood, Lucas Heights, Thirlmere, Glen Davis. CT: Mittagong, Newnes SF, Hill Top, Tallong.

Habitat

Habitat: Woodland and heath on sandstone.

Altitude: 0–1200 m **Annual rainfall:** 800–1400 mm

Typical local abundance: Frequent.

Vegetation: Heath and scrub e.g. with *Angophora hispida*, *Allocasuarina nana*, *Isopogon anemoniifolius*, *Eucalyptus stricta*; woodland e.g. with *Eucalyptus gummifera*, *E. haemastoma*, *Angophora bakeri*, *E. sieberi*, *E. piperita*, *E. sclerophylla*, *E. mannifera*.

Substrate: Deep or shallow sandy soil over sandstone, low nutrients, well-drained.

Exposure: Full sun to light shade.

Conservation

Conservation: Widespread and probably well conserved.

Lophostemon confertus* **MYRTACEAE**

Brush Box

Life history

Growth form: Large to very large tree with rough bark on lower trunk and smooth pinkish brown bark on upper trunk and branches. Smaller tree in Sydney area and often heavily lopped.

Vegetative spread: No.

Longevity: 100–200 years.

Primary juvenile period:

Flowers: White, October–December.

Fruit/seed: Woody capsule 8–12 mm diam., with seeds 2–3 mm long.

Dispersal, establishment & growth: Diaspore: seed, gravity-dispersed locally, seeds germinate without treatment; occasionally establishes in open areas after fire. Mature trees capable of withstanding severe pruning.

Fire response: Some resprouting from base.

Interaction with other organisms: Epiphytic orchid *Dendrobium aemulum* on trunks of large trees (Bishop 1996). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995). Host plant of butterflies Common Red-eye *Chaetocneme beata* and Eastern Flat *Netrocoryne repandra repandra* (Common & Waterhouse 1982). Attacked by larvae of White-stemmed Gum Moth *Chelepteryx collesi* without serious damage, Lewin's Bag Shelter Moth *Panacela lewiniae*, Leaf Case Moth *Hyalarcta huebneri* and Gum Leaf Skeletoniser Moth *Uraba lugens* (Hadlington & Johnston 1977). Host to larvae of Cup Moth *Doratifera casta*, larvae of moth *Cryptophasa epadelpha* bore into stems and branches (Common 1990). Host to Elephant Weevil *Orthorrhinus cylindrirostris* (Elliot & Jones 1986).

Distribution

Status/origin: Native to North Coast and Queensland, widely cultivated as a street tree, occasionally naturalised in the Sydney region.

Botanical subregions: NC *CC; Qld.

Distribution Sydney area: North from Hunter Valley.

Select locations: *CC: Mosman, Royal NP.

Habitat

Habitat: Roadsides.

Altitude: 0–200 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Occasional.

Vegetation: May naturalise in woodland and roadside habitats.

Substrate: Clay soils from shale, medium nutrients, well-drained.

Exposure:

Conservation

Conservation: Occasionally naturalised around Sydney, e.g. near entrance to Royal NP, but not an aggressive invader and unlikely to establish far from planted trees.

Melaleuca armillaris

MYRTACEAE

Life history

Growth form: Tall shrub or small tree up to 5 m high, with hard or corky bark; leaves linear, alternate.

Vegetative spread:

Longevity: 20–30 years.

Primary juvenile period:

Flowers: White or rarely pink, September–November, peak October.

Fruit/seed: Woody capsule 3–5 mm diam. with small seeds, retained on plant as canopy-stored seedbank for ?1 year; subsequently branchlets die, shedding seed.

Dispersal, establishment & growth: Diaspore: seed, germinates without treatment. Very good germination and adaptability in rehabilitation programs (Temple & Bungey 1980).

Fire response: Killed and re-establishes from seed released from burnt plants.

Interaction with other organisms: Jewel beetle *Stigmodera pertyi* found on flowers in November–December (Hawkeswood 1987b). The wasp Paperbark Sawfly causes considerable defoliation; the larvae pupate in the bark-phloem and if in large numbers can kill the tree, Tee-tree Sawfly *Pterygophorus* sp. causes similar damage (Hadlington & Johnston 1977).

Distribution

Status/origin: Native, widely cultivated.

Botanical subregions: NC CC SC NT CT NWS CWS; Qld, Vic., Tas.

Distribution Sydney area: Mainly coast, outlier near Jenolan Caves.

Select locations: CC: North Head, Bondi (1885), Long Bay, Kurnell, Cronulla, Jibbon, Wattamolla, Shellharbour, Albion Park. CT: Jenolan Caves, Bowral.

Habitat

Habitat: Coastal headlands, steep slopes.

Altitude: 0–1000 m **Annual rainfall:** 900–1600 mm

Typical local abundance: Frequent–dominant.

Vegetation: Coastal heath e.g. with *Banksia ericifolia*, *Allocasuarina distyla*; scrub e.g. with *Leptospermum laevigatum*, *Acacia sophorae*; dominant in scrub to open scrub in Illawarra; woodland e.g. with *Eucalyptus punctata*, *E. tenella* (Jenolan Granite Woodland of Keith & Benson 1988).

Substrate: Very shallow sandy soil on sandstone, granite, low–high nutrients. Budgong Sandstone, Bass Point Sandstone, and Bumbo Latite in Illawarra (M. Robinson pers. comm.).

Exposure: Full sun–light shade.

Conservation

Conservation: Conservation status unknown though naturally occurring population away from coast, e.g. at Albion Park is not conserved. Extensively planted e.g. along roads. Spreading into Garigal NP at Belrose from planted specimens at electricity substation (L.McD.). Used in rehabilitation around transmission towers by Elcom in Blue Mountains, and could naturalise there though generally, in spite of extensive plantings, has failed to naturalise successfully elsewhere.

Melaleuca biconvexa

MYRTACEAE

Life history

Growth form: Shrub or small tree to 10 m high, with papery bark, with opposite to more or less opposite leaves.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White or pale yellow in dense heads or short spikes.

Fruit/seed: Capsule 3–5 mm diam., with tiny seeds, shed soon after maturity.

Dispersal, establishment & growth: Diaspore: seed, locally dispersed. Possibly a dormancy factor, germination proportion is low, takes 2 months to germinate on moist surface (Robert Payne pers. comm.).

Fire response: Probably resprouts from base and rootsuckers.

Interaction with other organisms:

Distribution**Status/origin:** Native.**Botanical subregions:** NC CC SC.**Distribution Sydney area:** Mainly Gosford–Wyong area.**Select locations:** CC: Morisset, Tuggerah Lake, Wyong, Narara, Gosford, Mosman Bay (1887).**Habitat****Habitat:** Creekbanks and floodplains.**Altitude:** 0–100 m **Annual rainfall:** 1200–1400 mm**Typical local abundance:** Rare to dominant.**Vegetation:** Eucalypt open-forest e.g. with *Eucalyptus saligna*, *E. robusta*, *Acacia elata*; Paperbark scrub e.g. with *Melaleuca styphelioides*, *M. linariifolia*, *M. decora*, *M. sieberi*, *M. nodosa*.**Substrate:** Alluvium, shale (Terrigal formation), medium nutrient soils, poorly-drained.**Exposure:****Conservation****Conservation:** Inadequately conserved. Restricted to creeklines and floodplains and vulnerable to clearing and weed invasion. Listed as Vulnerable under NSW *Threatened Species Conservation Act 1995*. Approximately 0.5 ha in Bouddi NP. Outside the area it occurs at Jervis Bay and Port Macquarie.***Melaleuca capitata*****MYRTACEAE****Life history****Growth form:** Shrub to 2 m high, with scaly bark; young branchlets villous.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White to cream, summer.**Fruit/seed:** Woody capsule 4–7 mm diam.**Dispersal, establishment & growth:****Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** SC CT ST.**Distribution Sydney area:****Select locations:** CT: Bundanoon, Tallong.**Habitat****Habitat:****Altitude:** 700 m **Annual rainfall:** 700–1200 mm**Typical local abundance:****Vegetation:** Heath, open-forest.**Substrate:** Sandy soil on sandstone, low nutrients.**Exposure:****Conservation****Conservation:** Conservation status unknown, northern geographical limit is Bundanoon.

Melaleuca deanei**MYRTACEAE****Life history**

Growth form: Shrub to 3 m high with fibrous-flaky bark; leaves alternate with yellowish petioles, sometimes with massive woody lignotuber.

Vegetative spread: Root-suckering potential (L.McD.).

Longevity: More than 100 years.

Primary juvenile period:

Flowers: White, December. Low flowering incidence suggests that a specific environmental factor is required to trigger floral initiation and/or development (Virtue 1991). Old plants at Wedderburn flowered in November 1998, the first time for 15 years (R. Payne pers. comm.). Plants under observation in Garigal NP have not flowered for more than 4–5 years, seed capsules not seen on any plants (L.McD. 1998).

Fruit/seed: Barrel-shaped woody capsule 5.5–7 mm diam. Seed held in capsules in canopy for several years until dehydration (possibly up to 15 years, R. Payne pers. comm.) allows the capsules to open. In 10 sites surveyed by Travers Morgan (1990) only 2 sites had fruiting individuals and these individuals were less than 2% of the population; poor seed production and low seed set; higher seed set in large populations suggests requirement for crossbreeding (Virtue 1991). Aging of fruit may reduce seed viability (R. Payne pers. comm.).

Dispersal, establishment & growth: Parent plants may inhibit seedling establishment by allelopathy; seedling establishment likely to be highly dependent on prolonged moisture availability; high light requirement for germination, establishment of seedlings, and successful growth (Virtue 1991). Optimum germination 50% in 5 days at 30 °C; similar germination percentage in range 10–35 °C though germination time longer (Virtue 1991).

Fire response: Foliage killed, resprouts from epicormic buds, coppicing, and suckering (Virtue 1991). No flowering observed in absence of fire (in Garigal NP), may require fire to stimulate flowering (L.McD.). Plants at Lane Cove resprouting from base and trunk after moderate intensity fire (1/1994) produced some flowers in less than 2 years later (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC.

Distribution Sydney area: Coastal, Berowra to Nowra.

Select locations: CC: Fauconbridge, Springwood, Berowra, Hornsby, Lindfield, Ryde, Earlwood (1912), Lucas Heights, Heathcote, Waterfall, Wedderburn.

Habitat

Habitat: Broad flat ridgetops, dry ridges and slopes.

Altitude: 0–400 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Occasional–frequent.

Vegetation: Woodland e.g. with *Angophora costata*, *Corymbia gummifera*, *Eucalyptus punctata*, *E. agglomerata* and shrubby understorey e.g. *Banksia ericifolia*, *B. serrata*, *Petrophile pulchella*, *Leptospermum trinervium*, *Hakea teretifolia*.

Substrate: Sandy loam, sometimes with ironstone (laterite) on sandstone, low nutrients (e.g. Lucas Heights soil landscape in southern Sydney), low nutrients.

Exposure: Full sun, seedlings intolerant of shade, tolerant of waterlogging (Virtue 1991).

Conservation

Conservation: Rare, occurs as scattered clumps, coded 3RC- on national rare species list (Briggs & Leigh 1996). Does not appear to be well conserved.

Melaleuca decora**MYRTACEAE****Life history**

Growth form: Tall shrub or tree generally 5–7 m high, with paperbark.

Vegetative spread: No.

Longevity: 100 years or more.

Primary juvenile period:

Flowers: White, September–January, peak December. Probably pollinated by insects (P. Kubiak pers. comm.).

Fruit/seed: Woody capsule 2–3 mm wide with small seed, taking up to a year to mature and then retained on plant for another 6 months (Price 1963) as canopy-stored seedbank.

Dispersal, establishment & growth: Seeds wind-dispersed locally, no dormancy mechanism. Seedlings noted on ripped site at Rookwood (in September).

Fire response: Resprouts from epicormic buds and ground level or below. 50% of 5 year old saplings killed (at Rookwood, Price). Seed recruitment may occur after fire, requiring good light conditions and possibly good rainfall.

Interaction with other organisms: Host to mistletoe *Amyema gaudichaudii*. Seed eaten by Australian King Parrot *Alisterus scapularis* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC; Qld.

Distribution Sydney area: Mainly western Sydney.

Select locations: CC: Gosford, Epping, Lane Cove, Rookwood, Guildford, Liverpool, Shane Park, St Marys, Razorback, Albion Park.

Habitat

Habitat: Wetland.

Altitude: 0–200 m

Annual rainfall: mainly 700–1000 mm

Typical local abundance: Frequent.

Vegetation: Open-forest and woodland e.g. with *Eucalyptus tereticornis*, *Eucalyptus moluccana*, or dominating *Melaleuca* scrub (Cumberland Plain Woodland of Benson 1992).

Open-forest e.g. with *Eucalyptus tereticornis*, *E. longifolia*, *E. bosistoana*, *E. amplifolia* in Illawarra (M. Robinson pers. comm.).

Substrate: Clay soils mainly from Wianamatta Shale, fertile, often poorly-drained.

Watertable mostly low, moisture supply intermittent, fresh. Berry Siltstone and alluvium in Illawarra (M. Robinson pers. comm.).

Exposure: Indifferent exposure; light shade–no shade.

Conservation

Conservation: Conservation of populations on Cumberland Plain and Illawarra needed, threatened by housing, fire, weeds, fragmentation and grazing (M. Robinson pers. comm.).

Melaleuca ericifolia

MYRTACEAE

Life history

Growth form: Shrub or small tree to 8 m high with corky bark.

Vegetative spread: Possibly forms small thickets by suckering from rootstock.

Longevity: 50–100 years.

Primary juvenile period:

Flowers: White, July–October, peak October. Probably pollinated by native bees and honeybees, with flies and beetles also playing a role (P. Kubiak pers. comm.).

Fruit/seed: Woody capsules 2.5–4 mm, retained on plant, small seed released on death of branch.

Dispersal, establishment & growth: Diaspore: seed, wind-dispersed locally i.e. 20 m. Seedling recruitment after fire. Seed germination delayed by submergence in water, but seedling growth may increase in water-logged conditions (Ladiges et al. 1981).

Adult plants killed by prolonged (more than 6 months) flooding (East Hills).

Fire response: Stems killed, resprouts from base, often forming dense thickets.

Interaction with other organisms: Seed eaten by Crimson Rosella *Platycercus elegans* (Lepschi 1993).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC; Vic, Tas.

Distribution Sydney area: Coast, widespread.

Select locations: CC: Webbs Creek, Terrigal, Wisemans Ferry, Warriewood, Lane Cove (1917), Kurnell, Homebush (1894), Georges River, Lake Illawarra, (Minnamurra estuary, M.R.), Berry.

Habitat

Habitat: Low-lying estuarine or brackish coastal swamps.

Altitude: 0–50 m

Annual rainfall: above 700 mm

Typical local abundance: Frequent–dominant.

Vegetation: Woodland e.g. with *Melaleuca linariifolia*, *Melaleuca decora*, *Melaleuca nodosa* scrub, and thickets, often with *Casuarina glauca*.

Substrate: Sandy alluvium, clay soil on shale, watertable mostly high, moisture supply continuous, brackish. Tolerant of saline conditions (Ladiges et al. 1981). Recorded on saline sites in western NSW (Semple 1993).

Exposure: Full sun.

Conservation

Conservation: Poorly conserved in Illawarra (M. Robinson pers. comm.), conservation status elsewhere unknown.

Melaleuca erubescens

MYRTACEAE

Life history

Growth form: Shrub to 2 m high with hard rough bark.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: Pink, November–March, peak November–December.

Fruit/seed: Woody capsule 4 mm diam., retained in canopy.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC NWS CWS NWP SWP; Qld.

Distribution Sydney area: Mainly Western Sydney.

Select locations: CC: Castlereagh SF, Glen Davis, Berkshire Park, Fairfield, Rookwood, Villawood, Chester Hill, Kemps Creek, Lake Burragorang, East Hills, Holsworthy, Douglas Park.

Habitat

Habitat: Flat to gently undulating sites.

Altitude: 0–600 m **Annual rainfall:** 600–900 mm

Typical local abundance:

Vegetation: Woodland e.g. with *Eucalyptus sclerophylla*, *E. parramattensis*, *Angophora bakeri*, *Eucalyptus fibrosa*, *Melaleuca decora*, *M. nodosa*.

Substrate: Sandy clay over Tertiary alluvium, or occasionally Wianamatta Shale or Shoalhaven Shales, low nutrients, periodically wet.

Exposure:

Conservation

Conservation: Not well conserved.

Melaleuca hypericifolia**MYRTACEAE****Life history**

Growth form: Shrub to 6 m high, with corky bark.

Vegetative spread:

Longevity: ? medium.

Primary juvenile period:

Flowers: Red, September–January.

Fruit/seed: Woody capsule to 10 mm diam., capsules retained on plant as canopy-stored seedbank.

Dispersal, establishment & growth:

Fire response: A few plants resprouted, others were killed after high intensity fire (1/1994) at Lane Cove (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC SC CT ST.

Distribution Sydney area: Coast, with isolated occurrences in Blue Mountains.

Select locations: CC: Erina, Barrenjoey, Avalon, Dobroyd Point, Garie Beach, Stanwell Park, (Austinmer, Gerroa, M.R). CT: Wentworth Falls, Carrington Falls, Wombeyan Caves, Wingello.

Habitat

Habitat: Coastal headlands, gullies.

Altitude: 0–1000 m **Annual rainfall:** 1000–1400 mm

Typical local abundance: Occasional.

Vegetation: Coastal heath e.g. with *Westringia fruticosa*, *Lomandra longifolia*; woodland e.g. with *Eucalyptus piperita*.

Substrate: Sandy soil on sandstone, wet rock faces, low nutrients,

Exposure:

Conservation

Conservation: Seacliff/headland habitat poorly conserved in Illawarra (M. Robinson pers. comm.). Escapes from electricity substation at Belrose naturalising in Garigal NP along the Heath Track (L.McD.).

Melaleuca linariifolia

MYRTACEAE

Life history

Growth form: Shrub or small tree to 10 m high with papery bark.

Vegetative spread: No.

Longevity: More than 60 years (D. Keith pers. comm.).

Primary juvenile period:

Flowers: White, October–January, peak November. Probably pollinated by insects (P. Kubiak pers. comm.).

Fruit/seed: Woody capsules 3–4 mm diam., retained on plant for up to ?a year. Appear to be susceptible to destruction by insects.

Dispersal, establishment & growth: Diaspore: seed, probably wind-dispersed.

Recruitment mainly after fire (D. Keith pers. comm.), but also probably after flood periods.

Seedlings recruit in bare areas (Howell et al. 1995).

Fire response: Foliage killed and resprouts from epicormic buds on main stems.

Peak of post-fire flowering almost 4 years (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT ST; Qld.

Distribution Sydney area: Widespread.

Select locations: CC: Gosford, Pennant Hills, Hunters Hill, Cattai, Richmond, Glenfield, Orangeville, Mt Keira. CT: Mt Solitary, Wingello.

Habitat

Habitat: Floodplains, creekbanks.

Altitude: 0–1000 m **Annual rainfall:** above 700 m

Typical local abundance: Frequent–dominant.

Vegetation: Floodplain shrubland, e.g. with *Juncus usitatus*.

Substrate: On sandy alluvium and very occasionally on sandstone. Medium to high nutrient soils. Wet but not saline places usually subject to flooding.

Exposure: Full sun, tolerates periodic inundation.

Conservation

Conservation: Vulnerable, most floodplain habitats have been cleared or vulnerable to exotic weed encroachment. Poorly conserved in Illawarra (M. Robinson pers. comm.).

Melaleuca nodosa

MYRTACEAE

Life history

Growth form: Shrub 1–4 m high with corky–papery bark; forms thickets.

Vegetative spread: No.

Longevity: medium-long.

Primary juvenile period:

Flowers: White to yellow, September–November, peak October. Probably pollinated mostly by native bees and honeybees, with flies and beetles probably also playing a role (P. Kubiak pers. comm.).

Fruit/seed: Woody capsules 2–3 mm diam. with small seeds in spherical clusters, retained on plant, 4–5 generations of unopened capsules observed on individuals.

Dispersal, establishment & growth: Diaspore: seed, no dormancy, need light for early growth.

Fire response: Foliage killed, resprouts from base and from epicormic buds (Myerscough et al. 1995). Secondary juvenile period less than 4 yrs (P. Kubiak pers. comm.).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC NT NWS CWS; Qld, S.A.

Distribution Sydney area: Widespread in various situations. Coastal Port Hacking–Broken Bay; around Tuggerah and Lake Macquarie; western Sydney–Bankstown, St Marys, Richmond.

Select locations: CC: Wybung Head, Wyee, Wamberal, Dee Why, Manly, Rose Bay, Long Bay, La Perouse, Kogarah, Rookwood, Concord, Bankstown, Londonderry, Shane Park, Cabramatta, Glenfield, Douglas Park.

Habitat

Habitat: Coastal heath, clay plains.

Altitude: 0–100 m **Annual rainfall:** 800–1400 mm

Typical local abundance: Frequent.

Vegetation: Heath e.g. with *Melaleuca armillaris*, *Banksia ericifolia*, *Angophora costata*, *Corymbia gummifera* (Coastal Heath of Benson & Howell 1994); woodland and eucalypt open-forest e.g. with *Eucalyptus sclerophylla*, *Angophora bakeri*, *Melaleuca decora*, *Eucalyptus parramattensis* (e.g. Castlereagh Scribbly Gum Woodland of Benson 1992).

Substrate: Clay soils on Tertiary alluvium, Wianamatta Shale, Shaley sandstone, low nutrients, periodically poorly-drained.

Exposure: Full sun.

Conservation

Conservation: Campbelltown is southern geographical limit. Conservation status unknown.

Melaleuca quinquenervia**MYRTACEAE**

Paperbark

Life history

Growth form: Tree up to 10–15 m high with papery bark; leaves alternate, usually hairy, with 5 prominent veins. In extended flooded conditions produces a fibrous sheath of 'water roots' clothing the trunk to high water level (Cronk & Fuller 1995).

Vegetative spread: No.

Longevity: Probably greater than 100 years, though can reach trunk girths of 2.7 m in 40 years in cultivation.

Primary juvenile period:

Flowers: White, cream or greenish in many-flowered spike, February–September, peak April. Bat-pollinated, has musty smell, viscous nectar, dinghy colour and flowers on strong branches (Recher et al. 1979).

Fruit/seed: Capsule with small seeds, 34 000 per gram, released after vascular connections to fruit are severed e.g. after fire or frost;

Dispersal, establishment & growth: Diaspore: seed, short distance wind and water-dispersed; successful recruitment on moist or saturated soil (Cronk & Fuller 1995).

Fire response: Prolific epicormic growth after fire, flowering within weeks (Cronk & Fuller 1995).

Interaction with other organisms: Nectar eaten by Scaly-breasted Lorikeet *Trichoglossus chlorolepidotus* (Lepschi 1993). Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Allelopathic (Cronk & Fuller 1995). Resistant to termite attack (Froggatt 1923).

Introduced to N America where it is a major invader of disturbed wetlands in Florida, out-competing native species and reducing species diversity by 60–80%; infestation increases rapidly 5–95% in 25 years (Cronk & Fuller 1995).

Distribution

Status/origin: Native, frequently cultivated as a street tree.

Botanical subregions: NC CC; Qld, N.G.

Distribution Sydney area: Coast, north of Botany Bay.

Select locations: CC: Toukley, Wamberal, Gosford, Manly, Rose Bay (1900), Botany (1888), Kurnell, Towra Point.

Habitat

Habitat: Estuarine swamps and lake margins.

Altitude: 0–10 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Frequent–dominant.

Vegetation: Dominant in swamp forest or with *Eucalyptus robusta*, *E. botryooides*.

Substrate: Silty or sandy alluvium. Colonises low pH (2.5–6.5) acid sulphate estuarine soils in the Wyong area (Payne 1992).

Exposure: Can tolerate drought and salinity; intolerant of frost (Cronk & Fuller 1995).

Conservation

Conservation: Southern geographical limit is Botany Bay (Towra Point), conservation status unknown.

Melaleuca sieberi

MYRTACEAE

Life history**Growth form:** Tall shrub or small tree to 5 m high, with papery bark.**Vegetative spread:** No.**Longevity:****Primary juvenile period:****Flowers:** White or sometimes tinged with pink, October–November.**Fruit/seed:** Woody capsule 3–5 mm diam., retained for up to a year after flowering.**Dispersal, establishment & growth:** Soil-stored seedbank (Benwell 1998).**Fire response:** Foliage killed, resprouts from epicormic buds (Myerscough et al. 1995) and base, flowering profusely after two or three years (Elliot & Jones 1993).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC; Qld.**Distribution Sydney area:** Coast north from Gosford.**Select locations:** CC: Morisset, Wyee, Wyong, Gosford.**Habitat****Habitat:** Swamps, often on deep sand.**Altitude:** 0–200 m**Annual rainfall:** 1200–1400 mm**Typical local abundance:****Vegetation:** Wet heath.**Substrate:****Exposure:****Conservation****Conservation:** Gosford is southern geographical limit, conservation status unknown.**Melaleuca squamea**

MYRTACEAE

Life history**Growth form:** Shrub to 3 m high with corky bark; young branches hairy.**Vegetative spread:****Longevity:** 25–60 years (D. Keith pers. comm.).**Primary juvenile period:****Flowers:** Pink to purple, sporadic, mainly August–September.**Fruit/seed:** Woody capsule 5–7 mm diam., retained on plant.**Dispersal, establishment & growth:** Recruitment mainly after fire (D. Keith pers. comm.).**Fire response:** Killed by fire (D. Keith pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC CT; Vic., Tas., S.A.**Distribution Sydney area:** Coast and Upper Blue Mountains.**Select locations:** CC: Bondi, Coogee, La Perouse, Kurnell, Stokes Creek, Loddon River.

CT: Blackheath, Wentworth Falls.

Habitat**Habitat:** Wet sites, creek banks.**Altitude:** 0–1000 m**Annual rainfall:** 1200–1600 mm**Typical local abundance:** Frequent.**Vegetation:** Sedgeland and wet heath e.g. with *Sprengelia incarnata*, *Leptospermum squarrosum*, *Epacris obtusifolia*, *Baekkea linifolia*, *Gleichenia dicarpa*.**Substrate:** Clay loam soils on sandstone, low nutrients.**Exposure:****Conservation****Conservation:** Conservation status unknown.

Melaleuca squarrosa

MYRTACEAE

Life history**Growth form:** Shrub or small tree to 12 m high with papery bark.**Vegetative spread:** No.**Longevity:** More than 60 years (D. Keith pers. comm.).**Primary juvenile period:****Flowers:** White to yellowish, sometimes tinged with pink, October–November.**Fruit/seed:** Woody capsule 4 mm diam., seed held in capsules in the canopy 1–? 3 years**Dispersal, establishment & growth:** Recruitment mainly after fire (D. Keith pers. comm.).**Fire response:** Resprouts from lignotuber, secondary juvenile period 3 years (D. Keith pers. comm.). Killed by fire (Fox 1988).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST; Vic., Tas., S.A.**Distribution Sydney area:** Coastal range south of Sydney.**Select locations:** CC: Waterfall, Otford, Loddon Falls, Bulli, Cambewarra Mountain, Thirroul, Darkes Forest, Loddon Falls. CT: Merlya SF, Fitzroy Falls, Carrington Falls.**Habitat****Habitat:** Damp places.**Altitude:** 0–600 m **Annual rainfall:** 1200–1600 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Wet heath and swamp e.g. with *Leptospermum lanigerum*, *Melaleuca thymifolia*, *Hakea teretifolia*, *Banksia oblongifolia*.**Substrate:** Moist peaty to sandy soil on sandstone, low nutrients.**Exposure:****Conservation****Conservation:** Conservation status not known. Reported from Budderoo NP, Red Rock NR. Waterfall is northern geographical limit.

Melaleuca styphelioides

MYRTACEAE

Prickly-leaved Tea Tree

Life history**Growth form:** Shrub or small tree to 20 m high with papery bark.**Vegetative spread:** No.**Longevity:** Long-lived.**Primary juvenile period:****Flowers:** White, November–February, peak December. Native bees and honeybees are probably the main pollinators; beetles, butterflies, flies and moths probably involved too (P. Kubiak pers. comm.).**Fruit/seed:** Woody capsule 3–4 mm diameter, retained on plant for up to ?a year.**Dispersal, establishment & growth:** Diaspore: tiny seed, wind-dispersed, no dormancy, some seed store maintained on plants, no soil-stored seedbank.**Fire response:** Resprouted from base and trunk after high intensity fire (1/1994) at Narrabeen Lake (P. Kubiak pers. comm.) and Deepwater Creek.**Interaction with other organisms:** Host to epiphytic orchid *Dendrobium melaleuca-philum* (Bishop 1996).**Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT CT NWS; Qld.**Distribution Sydney area:** Widespread, Illawarra Plain and foothills, terraces of Wild Dog Mts (R. Lembit pers comm). Along drainage lines on Razorback and Mt Jellere.**Select locations:** CC: Wyong, Patonga, Gadesville (1887), Bankstown, Richmond, Ingleburn, Razorback, Albion Park. CT: Gaspers Mountain, Mt Victoria, Wild Dog Mountains, Mt Jellere.**Habitat****Habitat:** Often along stream banks.**Altitude:** 0–1000 m **Annual rainfall:** above 800 mm**Typical local abundance:** Frequent.**Vegetation:** Moist open-forest e.g. with *Eucalyptus saligna*, *E. blaxlandii*, *E. quadrangulata*.Dry open-forest e.g. with *Eucalyptus tereticornis*, *E. bosistoana*, *E. longifolia*, *Melaleuca decora*.**Substrate:** On alluvial soils from shales, basalt subject to flooding. Medium-high nutrient soils. Tolerates brackish water conditions in lagoon communities near Wollongong, but generally associated with fresh water.**Exposure:** Light to mid-shade, indifferent exposure.**Conservation****Conservation:** Poorly conserved in western Sydney. Lowland sites in Illawarra not conserved (M. Robinson pers. comm.).**Melaleuca thymifolia**

MYRTACEAE

Life history**Growth form:** Shrub to 2 m high with corky bark; stems often arising from a lignotuber.**Vegetative spread:** No.**Longevity:** Medium-long. More than 60 years (D. Keith pers. comm.).**Primary juvenile period:****Flowers:** Pink to deep mauve, in small spikes, October–May, peak October–November. Flowers on previous seasons growth (Verdon 1972).**Fruit/seed:** Woody capsule 3–5 mm diam., retained on plant.**Dispersal, establishment & growth:** Recruitment mainly after fire (D. Keith p.c.).**Fire response:** Stems killed, regenerates with basal sprouts from lignotuber (Benson 1981). May flower within 4 months of fire (D. Keith pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC CT NWS CWS; Qld.**Distribution Sydney area:** Widespread.**Select locations:** CC: Wyong, Mt White, Avalon, La Perouse, Kogarah, Rookwood, Warumbul, Austinmer, Londonderry, Castlereagh, Glenbrook, Springwood, Thirlmere, Barrengarry, Olinda, Grassy Hill. CT: Katoomba, Berrima, Wingello.

Habitat

Habitat: Damp places and margins of swamps.

Altitude: 0–1000 m **Annual rainfall:** 800–1400 mm

Typical local abundance: Frequent–occasional.

Vegetation: Eucalypt open-forest e.g. with *Banksia ericifolia*, *Banksia oblonga*; *Melaleuca* scrub e.g. with *Melaleuca nodosa*, *Melaleuca linariifolia*, *Melaleuca erubescens*; woodland e.g. with *Eucalyptus parramattensis*, *E. sclerophylla*.

Substrate: Poorly drained soils, with clay influence, on Tertiary alluvium, Wianamatta Shale, sandstone, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Conservation status unknown.

Micromyrtus blakelyi**MYRTACEAE****Life history**

Growth form: Low spreading shrub to 60 cm high; leaves triangular in cross-section with hairs along each margin.

Vegetative spread: No.

Longevity:

Primary juvenile period: Flowering within 2 years (L.McD.).

Flowers: Pink, September–November.

Fruit/seed: Indehiscent nut, with one seed, October–November, probably shed at maturity.

Dispersal, establishment & growth: Probably soil-stored seedbank, seedling recruitment observed after fire (at Muogamarra NR, L.McD.)

Fire response: Adults killed after high intensity fire (1/1994).

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CC.

Distribution Sydney area: Cowan and Maroota.

Select locations: CC: Cowan, Canoelands, Maroota.

Habitat

Habitat: Rock platforms on ridges.

Altitude: 0–200 m **Annual rainfall:** 800–1200 mm

Typical local abundance: Frequent.

Vegetation: Heath e.g. with *Angophora hispida*, *Corymbia gummifera*, *Banksia ericifolia*, *Grevillea buxifolia*, *Allocasuarina distyla*.

Substrate: Shallow sandy soil in depressions of sandstone rock platforms, low nutrients.

Exposure: Full sun.

Conservation

Conservation: Local restricted endemic, very poorly known; listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*, coded 2VCi on national rare species list (Briggs & Leigh 1996). Recorded from Marramarra NP and Muogamarra NR.

Micromyrtus ciliata

MYRTACEAE

Life history**Growth form:** Spreading to erect shrub to 1.2 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White to pink, August–October, peak September–October. Honeybees, native bees and flies probably the main pollinators, with beetles and wasps also involved (P. Kubiak pers. comm.).**Fruit/seed:** Indehiscent nut 2-3 mm long, with one seed, shed at maturity September–October.**Dispersal, establishment & growth:****Fire response:** Plants in rock platform depressions killed by high intensity fire (12/1990) at Bantry Bay, some germination 6–7 months later (L.McD.), killed after high intensity fire (1/1994) at Lane Cove, peak post-fire flowering less than 4 yrs (P. Kubiak pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC CT ST CWS; Vic, S.A.**Distribution Sydney area:** Coast and mountains.**Select locations:** CC: Wollemi Creek, Kulnura, Sackville, Hornsby, Willoughby, Manly, Coogee, La Perouse, Engadine.**Habitat****Habitat:** Often in rocky sites and in shallow soils in depressions of rock platforms.**Altitude:** 0–700 m **Annual rainfall:** 900–1400 mm**Typical local abundance:** Occasional.**Vegetation:** Heath e.g. with *Melaleuca nodosa*, *Allocasuarina distyla*, *Angophora hispida*; woodland e.g. with *Corymbia eximia*, *E. punctata*, *E. racemosa*.**Substrate:** Sandy soil on sandstone, low nutrients.**Exposure:****Conservation****Conservation:** Probably adequately conserved e.g. Ku-ring-gai Chase NP, Wollemi NP.***Micromyrtus minutiflora***

MYRTACEAE

Life history**Growth form:** Slender spreading shrub to 2 m high.**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** White, sporadically, June–March.**Fruit/seed:** Indehiscent nut**Dispersal, establishment & growth:****Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC.**Distribution Sydney area:** Between Richmond and St Marys.**Select locations:** CC: Castlereagh SF, Londonderry, Agnes Banks, Marsden Park, Berkshire Park, St Marys.**Habitat****Habitat:** Shrubby woodland.**Altitude:** 0–50 m **Annual rainfall:** 700–800 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Woodland e.g. with *Eucalyptus sclerophylla*, *Angophora bakeri*, *Melaleuca decora*, *Eucalyptus fibrosa* (Castlereagh Scribbly Gum Woodland of Benson 1992).**Substrate:** Sandy clay or gravelly soils on Tertiary alluvium, low nutrients.**Exposure:**

Conservation

Conservation: Restricted local endemic, listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*, coded 2V on national rare species list (Briggs & Leigh 1996). Recorded from Castlereagh NR.

Ochrosperma oligomerum* (*O. monticola*)*MYRTACEAE**

Life history

Growth form: Dense spreading shrub to 0.5 m high.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: White, September–November, peak October.

Fruit/seed: Capsule 2 mm diam., probably shed at maturity September–December.

Dispersal, establishment & growth:

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: CT CWS.

Distribution Sydney area: Blackheath to Rylstone.

Select locations: CC: Kandos Weir, Kekeelbon Mountains, Gospers Mountain, Cape Horn, Wolgan Pinnacle, Glowworm Tunnel, Blackheath, Mount Hay.

Habitat

Habitat: Sandstone ridges and pagoda rock outcrops.

Altitude: 700–1000 m **Annual rainfall:** 700–1400 mm

Typical local abundance: Frequent–rare.

Vegetation: Heath e.g. with *Allocasuarina nana*, *Calytrix tetragona*, *Leptospermum parvifolium*, *Eucalyptus bensonii*, *E. laophylla* (Pagoda Rock complex of Benson & Keith 1990).

Substrate: Shallow sandy soil on sandstone, low nutrients, well-drained.

Exposure:

Conservation

Conservation: Conservation status unknown.

Rhodamnia rubescens

MYRTACEAE

Scrub Turpentine

Life history**Growth form:** Shrub or small tree generally 1–5 m high; leaves strongly 3-veined, hairy.**Vegetative spread:** Can sucker and form spreading thickets (A. Bofeldt pers. comm.).**Longevity:****Primary juvenile period:****Flowers:** White, September–November, peak October.**Fruit/seed:** Red berry 5–8 mm diam. turning black, with few seeds, mature December.**Dispersal, establishment & growth:** Diaspore: fruit. Bird- and water-dispersed, germination 1–2 months (A. Bofeldt pers. comm.).**Fire response:** Resprouts from rootstock (A. Bofeldt pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT CT; Qld.**Distribution Sydney area:** Mainly coastal, north from Batemans Bay.**Select locations:** CC: Ourimbah, Kincumber, Bouddi, Calga, Mountain Lagoon, Collaroy, Cheltenham, Brush Farm, North Rocks (L.McD.), Hurstville, Audley, Stanwell Park, Austinmer, Shellharbour, Cambewarra.**Habitat****Habitat:** Warmer rainforest and rainforest margins.**Altitude:** 0–600 m **Annual rainfall:** 1000–1600 mm**Typical local abundance:** Frequent–rare.**Vegetation:** Warmer rainforest and margins, and moist eucalypt forest e.g. with *Eucalyptus pilularis*, *E. saligna*, *E. deanei*, *Syncarpia glomulifera*; creekbank vegetation e.g. with *Backhousia myrtifolia*, *Ceratopetalum apetalum*; open-forest e.g. with *Eucalyptus tereticornis*, *E. bosistoana*.**Substrate:** Clay soils on e.g. Budgong Sandstone, alluvium and Coal Measures in Illawarra.**Exposure:** Shade-tolerant.**Conservation****Conservation:** Conservation status unknown. Common and widespread in Illawarra (A. Bofeldt pers. comm.).**Rhodomyrtus psidioides**

MYRTACEAE

Native Guava

Life history**Growth form:** Shrub or small tree to 12 m high; oil glands numerous and conspicuous on the leaves.**Vegetative spread:** Can rootsucker (A. Bofeldt pers. comm.).**Longevity:****Primary juvenile period:****Flowers:** White or pink, December. Bees visit flowers (Williams & Adam 1997).**Fruit/seed:** Yellow fleshy berry 15–25 mm long,**Dispersal, establishment & growth:** Diaspore: fruit bird-, water-dispersed, germination variable 1–6 months (A. Bofeldt pers. comm.).**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC NC; Qld.**Distribution Sydney area:** Coast north from Broken Bay.**Select locations:** CC: North Entrance, Lisarow.

Habitat

Habitat: Rocky slopes, riverbanks.

Altitude: 0–150 m **Annual rainfall:** above 1200 mm

Typical local abundance: Rare.

Vegetation: Littoral rainforest e.g. with *Acmena smithii*, *Glochidion ferdinandi*, *Cupaniopsis anacardioides*; moist eucalypt forest.

Substrate: Sandy soil on dune sand, medium nutrients.

Exposure: Shade-tolerant.

Conservation

Conservation: Southern geographical limit is Barrenjoey (A. Bofeldt pers. comm.), conservation status unknown.

Syncarpia glomulifera**MYRTACEAE**

Turpentine

Life history

Growth form: Tall tree with fibrous to stringy, persistent bark, sometimes reduced to a small tree or multistemmed mallee form.

Vegetative spread: No.

Longevity: More than 100 years, possibly to 500 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: Cream, August–December, peak October. Native bees and honey bees probably the main insect pollinators, with flies and moths also involved; Rainbow Lorikeet *Trichoglossus haematodus* and Noisy Miner *Manorina melanocephala* feeding on nectar probably pollinators too (P. Kubiak pers. comm.).

Fruit/seed: Woody capsule of multiple fruit 10–20 mm diam. Mature summer (L. Parkinson pers. comm.), retained for up to a year.

Dispersal, establishment & growth: Dispersal: seed, no special morphology for dispersal (Westoby et al. 1990). Germination 2–5 weeks, may colonise gaps created by landslip (A. Bofeldt pers. comm.).

Fire response: Resprouts from lignotuber and epicormic buds. Suckering at Marramarra NP (1993), resprouts from epicormic buds after high intensity fire (1/1994) at Katandra (L.McD.).

Interaction with other organisms: Blossoms eaten by Grey-headed Flying Fox *Pteropus poliocephalus* and Little Red Flying Fox *Pteropus scapulatus* (Eby 1995). Moth larvae *Plectophila discalis* and *Agriophara horridula* feed in shelter formed between leaves (Common 1990). Timber is hard and durable and resistant to marine borers and termites (Harden 1991, Froggatt 1923).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT; Qld.

Distribution Sydney area: Widespread on coast and lower ranges.

Select locations: CC: Wye, Kulnura, Moutain Lagoon, Kurrajong, Springwood, Cheltenham, Strathfield, Kogarah, Silverwater, Austinmer, Macquarie Pass, Cambewarra. CT: Leura, Bundanoon.

Habitat

Habitat: Gullies or shale-forest.

Altitude: 0–1000 m **Annual rainfall:** 900–1600 mm

Typical local abundance: Frequent.

Vegetation: Rainforest margins or moist eucalypt forest e.g. with *Angophora floribunda*, *E. paniculata*, *E. globoidea* (Turpentine–Ironbark Forest of Benson & Howell 1994, Shale Cap Forest of Benson 1992), *E. muelleriana*, *E. quadrangulata*; or as a small tree in dry forest e.g. with *Angophora costata*, *Corymbia eximia*.

Substrate: Clay soils on Wianamatta Shale, shale/sandstone transition, and shales associated with sandstone strata, medium to high nutrients. Coal Measures, Budgong Sandstone and alluvium in Illawarra (M. Robinson pers. comm.).

Exposure: Mid-shade.

Conservation

Conservation: Widespread and generally conserved though shale-forest communities poorly conserved e.g. Turpentine–Ironbark Forest listed as Endangered Ecological Community under the NSW *Threatened Species Conservation Act 1995*.

Syzygium australe

MYRTACEAE

Brush Cherry

Life history

Growth form: Shrub or small tree with flaky bark; branchlets have 4 narrow wings that meet at each node and form a 'pocket' on each side; main veins distinct, oil dots sparse and just visible to the naked eye (Wilson 1989).

Vegetative spread: No.

Longevity: 100–200 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: White, December–April.

Fruit/seed: Reddish pink to red fleshy fruit 15–25 mm long, usually with one seed, January–September.

Dispersal, establishment & growth: Diaspore: fruit, dispersed by gravity, birds and water (R. Payne pers. comm.). Germination period 15–35 days; lignotuber absent in seedlings (Hyland 1983). Seed viability is short 1–3 months (A. Bofeldt pers. comm.).

Fire response:

Interaction with other organisms: Fruit eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995) Silvereye, Brown Pigeon, Wonga Pigeon, Satin Bowerbird.

Larvae of moth *Cryptophasa pultenae* bore into stems (Common 1990).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC; Qld.

Distribution Sydney area: Coastal districts north from Batemans Bay.

Select locations: CC: Yarralong and Dooralong Valleys, Gosford, Brush Farm, Rhodes (1884), Dumbal Brook, Mt Keira, Albion Park, Foxground, Cambewarra, Minnamurra Falls.

Habitat

Habitat: Often along streams, moist sites.

Altitude: 0–400 m

Annual rainfall: 1000–1600 mm

Typical local abundance: Frequent–rare.

Vegetation: Rainforest e.g. littoral rainforest with *Cassine australe*, *Emmenosperma alphitonioides*; *Acmena smithii*, *Cryptocarya glaucescens*; gallery rainforest and edges of warmer rainforest e.g. with *Toona ciliata*, *Dendrocnide excelsa*.

Substrate: Alluvium, basalt, Quaternary sands at Yarralong and Dooralong Valley (Payne 1997), medium–high nutrients, good–impeded drainage (A. Bofeldt pers. comm.).

Exposure: Tolerates shade in gully rainforest (Payne 1997).

Conservation

Conservation: Inadequately conserved, particularly north of Sydney (R. Payne pers. comm.). Lowland habitats in Illawarra poorly conserved (M. Robinson pers. comm.).

Syzygium francisii

MYRTACEAE

Giant Water Gum

Life history

Growth form: Medium-sized to large buttressed tree to 30 m with slightly flaky bark

Vegetative spread:

Longevity: Up to 500 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: White, October–December.

Fruit/seed: Purplish blue fleshy fruit 10–20 mm diam., with 1–2 seeds;

Dispersal, establishment & growth: Diaspore: fruit, bird-, water-dispersed, short viability less than 2 months (A. Bofeldt pers. comm.). Germination period about 20 days; lignotuber absent in seedlings (Hyland 1985).

Fire response:

Interaction with other organisms:

Distribution

Status/origin: Native.

Botanical subregions: NC CC; Qld.

Distribution Sydney area: Gosford area.

Select locations: CC: Matcham, (Wyong River, A.B).

Habitat

Habitat: Sheltered fertile valleys.

Altitude: 0–100 m **Annual rainfall:** above 1200 mm

Typical local abundance: Rare.

Vegetation: Warm temperate/sub-tropical rainforest e.g. with *Ceratopetalum apetalum*, *Doryphora sassafras*, *Archontophoenix cunninghamiana*, *Schizomeria ovata*, *Cryptocarya glaucescens*.

Substrate: Clay soil, probably on alluvium, high nutrients. pH 4–6 (see Payne 1987 for data on soils in Gully Rainforest at Gosford).

Exposure: Shade intolerant (A. Bofeldt pers. comm.).

Conservation

Conservation: Gosford area is southern geographic limit, rare, conservation status there unknown.

Syzygium oleosum**MYRTACEAE**

Blue Lilly Pilly

Life history

Growth form: Shrub or small tree with flaky bark; leaves with main veins distinct, oil dots numerous and conspicuous.

Vegetative spread: No.

Longevity:

Primary juvenile period:

Flowers: White, December–March.

Fruit/seed: Bluish purple or magenta fleshy fruit 10–25 mm diam., with one seed, May–August.

Dispersal, establishment & growth: Germination period 20–60 days; lignotuber absent in seedlings (Hyland 1983).

Fire response:

Interaction with other organisms: Fruit eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC; Qld.

Distribution Sydney area: Coast.

Select locations: CC: Narara, Wondabyne, Bouddi, Wisemans Ferry, Barrenjoey, Mona Vale, Manly, Kurnell, Hacking River, Bundeena, Otford.

Habitat

Habitat:

Altitude: 0–100 m **Annual rainfall:** 1200–1400 mm

Typical local abundance: Occasional.

Vegetation: Littoral rainforest e.g. with *Cassine australe*, *Acmena smithii*, *Eupomatia laurina*, *Wilkea huegeliana*, sometimes with *Syzygium paniculatum*; gully rainforest e.g. with *Ceratopetalum apetalum*.

Substrate: Sand dunes and alluvium, medium nutrients. pH 4–6 (see Payne 1987 for data on soils in Gully Rainforest at Gosford).

Exposure:

Conservation

Conservation: Conservation status unknown.

Syzygium paniculatum

MYRTACEAE

Life history

Growth form: Shrub or small tree with flaky bark; leaves with indistinct veins and oil dots obscure (Wilson 1989).

Vegetative spread:

Longevity: 75–200 years (A. Bofeldt pers. comm.).

Primary juvenile period:

Flowers: Creamy-white, December–January. Self-pollinates (R. Payne pers. comm.).

Fruit/seed: Purple fleshy berry to 15–25 mm diam. Seed 7–15 mm diam. (Hyland 1983), polyembryonic (can produce multiple seedlings). Trees fruit irregularly, perhaps every second year (R. Payne pers. comm.).

Dispersal, establishment & growth: Diaspore: fruit, local dispersal by gravity. No known bird dispersal in Gosford–Wyong area (R. Payne pers. comm.). Seed viability less than 3 months (A. Bofeldt pers. comm.), germinates readily without treatment.

Germination period about 20 days; lignotuber absent in seedlings (Hyland 1983).

Seedlings found under adult plants are possibly short-lived.

Fire response: Killed by wildfire (at Wyrribalong NP 35 trees killed); may resprout from base or with epicormic shoots, secondary juvenile period 2 years (R. Payne pers. comm.).

Interaction with other organisms: Fruit reported from pellets of Currawongs (Buchanan 1989a).

Fruit eaten by Grey-headed Flying Fox *Pteropus poliocephalus* (Eby 1995).

Distribution

Status/origin: Native. Often grown as an ornamental species and confused with *Acmena smithii*.

Botanical subregions: NC CC SC.

Distribution Sydney area: Coastal.

Select locations: CC: Ourimbah Creek, Budgewoi, North Entrance Peninsula, Wamberal, Hardys Bay, Towra Point, Earlwood, Kurrajong Heights, (Coalcliff, Mt Kembla, A.B.).

Habitat

Habitat: Near creeks or moist slopes.

Altitude: 0–500 m **Annual rainfall:** 1100–1400 mm

Typical local abundance: Rare.

Vegetation: Littoral rainforest e.g. with *Cupaniopsis anacardioides*, *Ficus rubiginosa*, *Eleocarpus obovatus*, *Acmena smithii*, *Glochidion ferdinandi*, *Syzygium oleosum*; or gallery rainforest e.g. with *Acmena smithii*, *Cryptocarya glaucescens*, *Canthium coprosmoides*.

Substrate: Coastal dune sand or creek alluvium, clay loams, low–medium nutrients, well-drained. Bulgo Sandstone, Cordeaux Crinanite, Narrabeen series in Illawarra (A. Bofeldt pers. comm.).

Exposure: Tolerates shade but needs light for regeneration (R. Payne pers. comm.).

Conservation

Conservation: Listed as Vulnerable (schedule II) under NSW *Threatened Species Conservation Act 1995*. Coded 3VCI on national rare species list (Briggs & Leigh 1996). Vulnerable species because of limited patchy distribution. Conserved at Wyrribalong NP and Bouddi NP and at Jervis Bay. Rare in Illawarra (A. Bofeldt pers. comm.). Despite having such a limited natural distribution *S. paniculatum* is one of the most widely cultivated *Syzygium* species in Sydney (Wilson 1989).

***Triplarina imbricata* (*Baeckea camphorata* in part)**

MYRTACEAE

Life history

Growth form: Shrub to 3 m high with grey, scaly bark; oil glands scattered on either side of mid-rib. *T. nowraensis* is similar but large oil glands in 2 parallel lines on either side of mid-rib.

Vegetative spread:

Longevity:

Primary juvenile period:

Flowers: November–December, 2 in each leaf axil (Bean 1995).

Fruit/seed: Mature February (Bean 1995).

Dispersal, establishment & growth:**Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC.**Distribution Sydney area:** Parramatta.**Select locations:** Parramatta (1803, 1808, c. 1850).**Habitat****Habitat:** Rocky riverbanks.**Altitude:** 0–100 m**Annual rainfall:** 1000 mm**Typical local abundance:****Vegetation:** Riparian scrub e.g. with *Tristaniopsis laurina*, *Backhousia myrtifolia*.**Substrate:** Sandy alluvium from sandstone, low nutrients, permanent moisture.**Exposure:** Sheltered (Bean 1995).**Conservation**

Conservation: Listed as Endangered (schedule 1) under NSW *Threatened Species Conservation Act 1995*. Coded 2E on national rare species list (Briggs & Leigh 1996). Regarded as extinct in Sydney area as no Herbarium collections since 1850s (Bean 1995). It is likely that Parramatta populations of *T. imbricata* have been destroyed by urban development or overwhelmed by weeds. Only other collection is from Nymboida, NC.

Triplarina nowraensis* (*Baeckea camphorata* in part)*MYRTACEAE****Life history**

Growth form: Shrub to 3.5 m high with grey and scaly bark on branchlets; large oil glands in 2 parallel lines on either side of mid-rib. *T. imbricata* is similar but oil glands on leaf are scattered.

Vegetative spread:**Longevity:****Primary juvenile period:****Flowers:** November–December (Bean 1995).**Fruit/seed:** Capsule, almost 3 mm diam., seeds brown 0.6–0.8 mm long, mature December–March (Bean 1995).**Dispersal, establishment & growth:****Fire response:****Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC SC.**Distribution Sydney area:** Nowra.**Select locations:** CC: Nowra (only known locality).**Habitat****Habitat:** Moist heath, close to steam channels or swampy slopes (Bean 1995).**Altitude:** 0–50 m**Annual rainfall:** 1400 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Heathland e.g. with *Leptospermum polygalifolium*, *Melaleuca linariifolia*, *M. thymifolia*, *Baeckea virgata*, *Kunzea ambigua*.**Substrate:** Sandy soil on sandstone, low nutrients.**Exposure:****Conservation**

Conservation: Listed as Endangered (schedule 1) under NSW *Threatened Species Conservation Act 1995*. Coded 2E on national rare species list (Briggs & Leigh 1996). Known only from a small population but not known in any conservation area, threatened by urban development, sedimentation and road widening (Bean 1995).

Tristania neriifolia

MYRTACEAE

Water Gum

Life history**Growth form:** Small shrub or tree with smooth to slightly flaky bark and opposite leaves.**Vegetative spread:****Longevity:** 25–75 years (A. Bofeldt pers. comm.).**Primary juvenile period:****Flowers:** Yellow, December–January.**Fruit/seed:** Capsule 4–5 mm diam., with numerous seeds 1–2 mm long, seed shed at maturity or shortly after, March–August.**Dispersal, establishment & growth:** Water- and wind-dispersed, germination 3–6 weeks (A. Bofeldt pers. comm.).**Fire response:** Resprouted from base after high intensity fire (1/1994) and stems after lower intensity fire, at Narrabeen Lake (P. Kubiak pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** CC CT.**Distribution Sydney area:** Widespread Woronora Plateau.**Select locations:** CC: Mangrove Mountain, Hornsby, Killara, Hunters Hill, Leumeah, Woronora River, Boal Creek, Stanwell Park, Tahmoor, Springwood, Hill Top.

CT: Bowens Creek, Wentworth Falls, Blackheath.

Habitat**Habitat:** Along stream beds and banks.**Altitude:** 0–1000 m**Annual rainfall:** 1000–1600 mm**Typical local abundance:** Frequent–occasional.**Vegetation:** Riparian scrub e.g. with *Tristaniopsis laurina*, *Callicoma serratifolia*, *Lomatia myricoides*, *Ceratopetalum apetalum*.**Substrate:** Sandy soil, amongst sandstone rocks along streams, low nutrients, periodically flooded.**Exposure:** Full sun–semi-shade (A. Bofeldt pers. comm.).**Conservation****Conservation:** Creek riparian habitat susceptible to disturbance and invasion by exotic weeds, conservation status unknown. Southern geographical limit is Avon River catchment (A. Bofeldt pers. comm.).***Tristaniopsis collina***

MYRTACEAE

Mountain Water Gum

Life history**Growth form:** Shrub or small tree often exceeding 30 m. This species has previously been confused with *T. laurina* but it differs in habitat, bark, leaf shape, oil gland frequency and the size of petals and staminal fascicles (Wilson & Waterhouse, 1982).**Vegetative spread:****Longevity:****Primary juvenile period:****Flowers:** Yellow, December–January.**Fruit/seed:** Woody capsule 6–8 mm long, seed held in canopy up to 3 months.**Dispersal, establishment & growth:** Winged seeds germinate without treatment.**Fire response:** Resprouted from base after high intensity fire (1/1994) at Lane Cove and Narrabeen Lake, some flowering less than 2 years later (P. Kubiak pers. comm.).**Interaction with other organisms:****Distribution****Status/origin:** Native.**Botanical subregions:** NC CC SC NT CT ST; Qld.**Distribution Sydney area:** Widespread.**Select locations:** CC: Wyong, Erina, Barrenjoey, Belrose (L.McD.), Cheltenham, Bondi (1898), Stanwell Tops, Saddleback Mountain, Minnamurra Falls, Cambewarra, Mt Irvine, Bowens Creek, Springwood. CT: Blackheath, Katoomba, Robertson.

Habitat

Habitat: Moist situations, gullies, hillsides, below waterfalls.

Altitude: 0–1000 m **Annual rainfall:** 1200–1600 mm

Typical local abundance: Frequent.

Vegetation: Moist forest e.g. *Syncarpia glomulifera*, *Eucalyptus fastigata*, *E. oreades*, *E. piperita*, *Angophora floribunda*; edges of rainforest, occasionally along streams but less frequent than *Tristaniopsis laurina*.

Substrate: Clay soils on shale, basalt, medium-high nutrient soils.

Exposure: Sheltered sites, mid-shade.

Conservation

Conservation: Conservation status unknown.

Tristaniopsis laurina**MYRTACEAE**

Water Gum, Kanuka

Life history

Growth form: Tree to 30 m high, but usually less, often multistemmed. Bark light grey, shedding in thin papery flakes (Floyd 1973).

Vegetative spread: No.

Longevity: More than 100 years.

Primary juvenile period:

Flowers: Yellow, December–February peak January. Bees visit flowers (Williams & Adam 1997).

Fruit/seed: Capsule, 6–10 mm long, with several winged seeds 5–6 mm long. Seed shed July–August (Beardsell 1981).

Dispersal, establishment & growth: Diaspore: seeds, wind-dispersed, germinate without treatment, no soil-stored seedbank. Seeds shed annually and viable for only a few months (Langkamp 1987). Seeds have short period of viability, less than 12 months if stored at 20°C (Beardsell 1981). Germination 4–7 weeks (A. Bofeldt pers. comm.). Coloniser species, exploits increased light and nutrients following disturbance (Mellick 1990b).

Fire response: Resprouts from epicormic buds or lignotuber (Howell et al. 1995). Secondary juvenile period less than 2.5 years (P. Kubiak pers. comm.).

Interaction with other organisms: Host to epiphytic plants (Beardsell & Jingsgaard 1993).

Distribution

Status/origin: Native.

Botanical subregions: NC CC SC CT; Qld, Vic.

Distribution Sydney area: Widespread riparian species.

Select locations: CC: Dharug, Wisemans Ferry, Cowan Creek, Lane Cove River, Georges River, Nortons Basin, Cobbitty, Woronora River, (Coalcliff, A.B.), Cataract Dam, Cambewarra, Kowmung River, Bundanoon.

Habitat

Habitat: Watercourses and riverbanks, levee banks.

Altitude: 0–800 m **Annual rainfall:** above 700 mm

Typical local abundance: Frequent.

Vegetation: Riparian woodland and scrub e.g. with *Casuarina cunninghamiana*, *Backhousia myrtifolia*, *Callicoma serratifolia*, *Ceratopetalum apetalum* (Riverflat Forest of Benson 1992). Warm-temperate and riparian rainforest in Illawarra (A. Bofeldt pers. comm.).

Substrate: On sandstone or sandy alluvium, low to medium-nutrient soils. Watertable permanently high, moisture supply continuous, fresh, well-drained.

Exposure: Light shade–full sun. Flood and drought-tolerant (Mellick 1990a,c).

Conservation

Conservation: Vulnerable, much riparian habitat cleared or subject to weed encroachment, particularly along Hawkesbury–Nepean River (Howell et al. 1995).

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